United States Department of the Interior
Bureau of Land Management

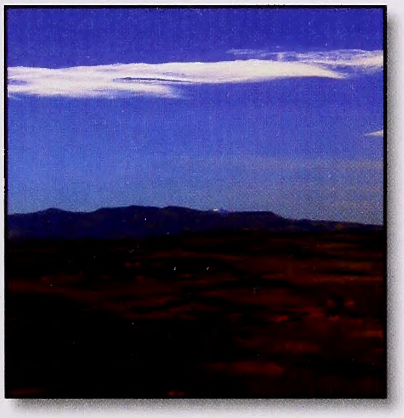
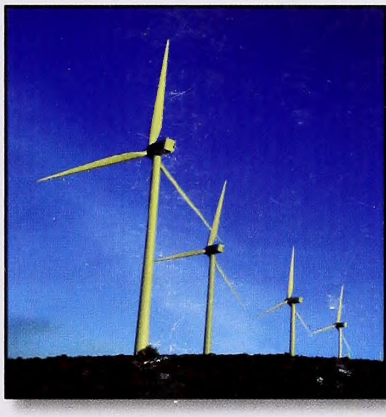
BLM

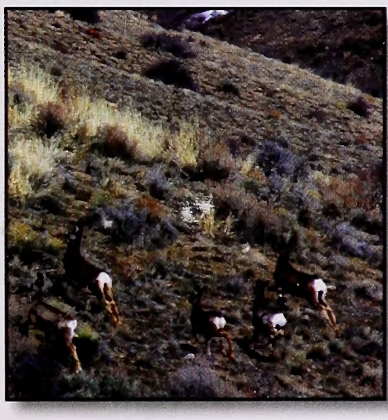
Environmental Impact Statement

(DOI-BLM-ID-T010-2011-0008-EIS)

Draft Environmental Impact Statement for the Proposed China Mountain Wind Project and Resource Management Plan Amendment

Location: **Jarbidge Field Office, Twin Falls County, Idaho**
Wells Field Office, Elko County, Nevada



March 2011

VOLUME I

BLM/ID/PT-11/002+5101

DRAFT ENVIRONMENTAL IMPACT STATEMENT COVER SHEET

Project Title: China Mountain Wind Project

Project Location: The project area is located in Twin Falls County, Idaho, and Elko County, Nevada, southwest of Rogerson, Idaho and west of Jackpot, Nevada.

Lead Agency: U.S. Department of the Interior, Bureau of Land Management
Jarbidge Field Office, Twin Falls, Idaho
Wells Field Office, Elko, Nevada

Cooperating Agencies: Twin Falls County Board of Commissioners, Idaho
Elko County Board of Commissioners, Nevada
Nevada Department of Wildlife
State of Idaho

Comments Must be Received by: 90 days after the U.S. Environmental Protection Agency publishes a Notice of Availability in the Federal Register

BLM Contact Person: Scott Barker, Project Manager
Jarbidge Field Office
2536 Kimberly Road
Twin Falls ID 83301
(208) 735-2072

Responsible Official: Associate State Director
Bureau of Land Management
Idaho State Office
1387 South Vinnell Way
Boise ID 83709

This Draft Environmental Impact Statement analyzes the environmental consequences of the proposed China Mountain Wind Project. The BLM considered nine alternatives, including the No Action Alternative (Alternative A), in detail. The Proposed Action (Alternative B1) would authorize a right-of-way on BLM-administered lands for the construction and operation of 170 wind turbines and associated facilities including roads, a transmission line, substations, and operations and maintenance facilities associated with the China Mountain Wind Project. Three phased alternatives (Alternatives B2a, B2b, and B2c) would authorize a right-of-way for the same facilities as the proposed action; however, under these alternatives implementation would be constructed in two phases. The remaining alternatives would also authorize a right-of-way for the construction and operation of wind turbines and associated facilities: Alternative C would authorize 152 wind turbines; Alternative D would authorize 124 wind turbines; Alternative E would authorize 120 wind turbines; and Alternative F would authorize 105 wind turbines. As disclosed in Chapter 4 of the Draft Environmental Impact Statement, the project would have significant impacts on wildlife and their habitats, historic and cultural resources, tribal treaty rights and interests, and visual resources. Chapter 4 also discloses the impacts to other resources such as special status plants, vegetation, soils, water, air quality, and other land uses. The BLM has not identified a preferred alternative.

Register. The BLM will hold public meetings to discuss the Draft EIS. Dates, times, and locations of these meetings will be distributed in newsletters, announced in the local news media, and posted on the project website: http//www.blm.gov/id/st/en/prog/planning/china_mountain_wind.html.

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, be advised that your entire comment, including your personal identifying information, may be made publicly available at any time. While you can ask us in your comment to withhold from public review your personal identifying information, we cannot guarantee that we will be able to do so.

You may submit written comments on the Draft EIS by hand delivery, U.S. postal mail, facsimile, or electronic mail (email). Written comments will also be accepted at the public meetings. The Jarbidge Field Office business hours for submitting hand-delivered comments are 7:45 am to 4:30 pm Monday through Friday, excluding holidays. The telephone number for facsimile comments is (208) 736-2375. Electronic comments must be submitted in a format such as an email message, plain text (.txt), rich text format (.rtf), Word (.doc), or portable document format (.pdf) to: id_chinamtn_eis@blm.gov. E-mails submitted to e-mail addresses other than the one listed, in other formats than those listed, or containing viruses will be rejected. Please include "China Mountain Wind Project" in the subject line of e-mail comments. Comments submitted via U.S. postal mail can be sent to:

Project Manager
China Mountain Wind Project EIS
Bureau of Land Management
Jarbidge Field Office
2536 Kimberly Road
Twin Falls ID 83301

To be most helpful, comments on the Draft EIS should be as specific as possible, mentioning particular pages, sections, or chapters. All comments will be reviewed; however, only substantive comments will be utilized during the preparation of the Final EIS. For a comment to be substantive, it should:

- Provide new information pertaining to the Proposed Action, an alternative, or the analysis;
- Identify a different way to meet the underlying need;
- Point out a specific flaw in the analysis;
- Suggest alternate methodologies that should be used, including reasons why;
- Make factual corrections, or
- Identify a different source of credible research, which, if used in the analysis, could result in different effects.

For additional information, contact Scott Barker, Project Manager, Jarbidge Field Office at (208) 735-2072, or visit the website at: http://www.blm.gov/id/st/en/prog/planning/china_mountain_wind.html.

Thank you for your interest and participation in this analysis.

Sincerely,

Rick Vander Voet

Rick Vander Voet
Jarbidge Field Manager

SUMMARY

INTRODUCTION

China Mountain Wind, LLC and NV Energy (Applicants) have submitted an application for a right-of-way (ROW) grant to the Bureau of Land Management (BLM) for the development of up to a 425 megawatt wind energy facility. The Applicants proposal consist of up to 170 wind turbines, 83 miles of all-weather gravel roads, 19 miles of overhead electric transmission line, up to 3 permanent meteorological towers, 3 electric substations, and 2 operation and maintenance facilities. The Applicants' objectives are to provide commercial-scale wind power in an environmentally responsible manner, using technology that is currently available and economically viable, and that can interconnect with and deliver electricity to an existing transmission system.

The proposed project would be sited on the National System of Public Lands (public lands) administered by the BLM Twin Falls District, Jarbidge Field Office (50%) and BLM Elko District, Wells Field Office (15%), lands administered by the Idaho Department of Lands (7%), and private ownership (28%) in Twin Falls County, Idaho and Elko County, Nevada. The project area consists of the 30,700-acre area ROW preference area and a 250-foot buffer around linear features such as the transmission interconnect line and Monument Springs Road (see Figure S-1).

In response to the ROW application, the BLM is preparing an Environmental Impact Statement (EIS) to analyze and disclose the environmental consequences of approving the application and authorizing a wind energy facility. The purpose of the BLM action is to respond to the applications under Title V of the Federal Land and Management Act and BLM ROW regulations. BLM will determine whether to grant or deny ROWs over, upon, under, or through public lands for the purposes of generating and transmitting electric energy. As part of this process, the BLM considers actions that meet the Applicants' objectives while preventing unnecessary or undue degradation to those physical, biological, and social resources present on public lands in the project area. The EIS for the project is being prepared by the BLM Jarbidge Field Office in Idaho and the Wells Field Office in Nevada. The Jarbidge Field Office is designated as the lead BLM office.

PUBLIC INVOLVEMENT AND IDENTIFICATION OF ISSUES

Public scoping was initiated on April 21, 2008 when BLM first published a Notice of Intent to prepare a draft EIS (DEIS) in the Federal Register. The Notice of Intent provided a brief description of the purpose and need, a description of the project location, and a summary of the infrastructure associated with the project. A second Notice of Intent for the project was published on July 14, 2008 in the Federal Register and extended the scoping period. A newsletter was mailed to Tribes, Federal, state and local agencies, interest groups, and members of the general public on June 5, 2008. This newsletter invited comments and announced the upcoming scoping meetings. Three scoping meetings were held during June 2008 in Elko Nevada, Jackpot Nevada, and Twin Falls, Idaho.

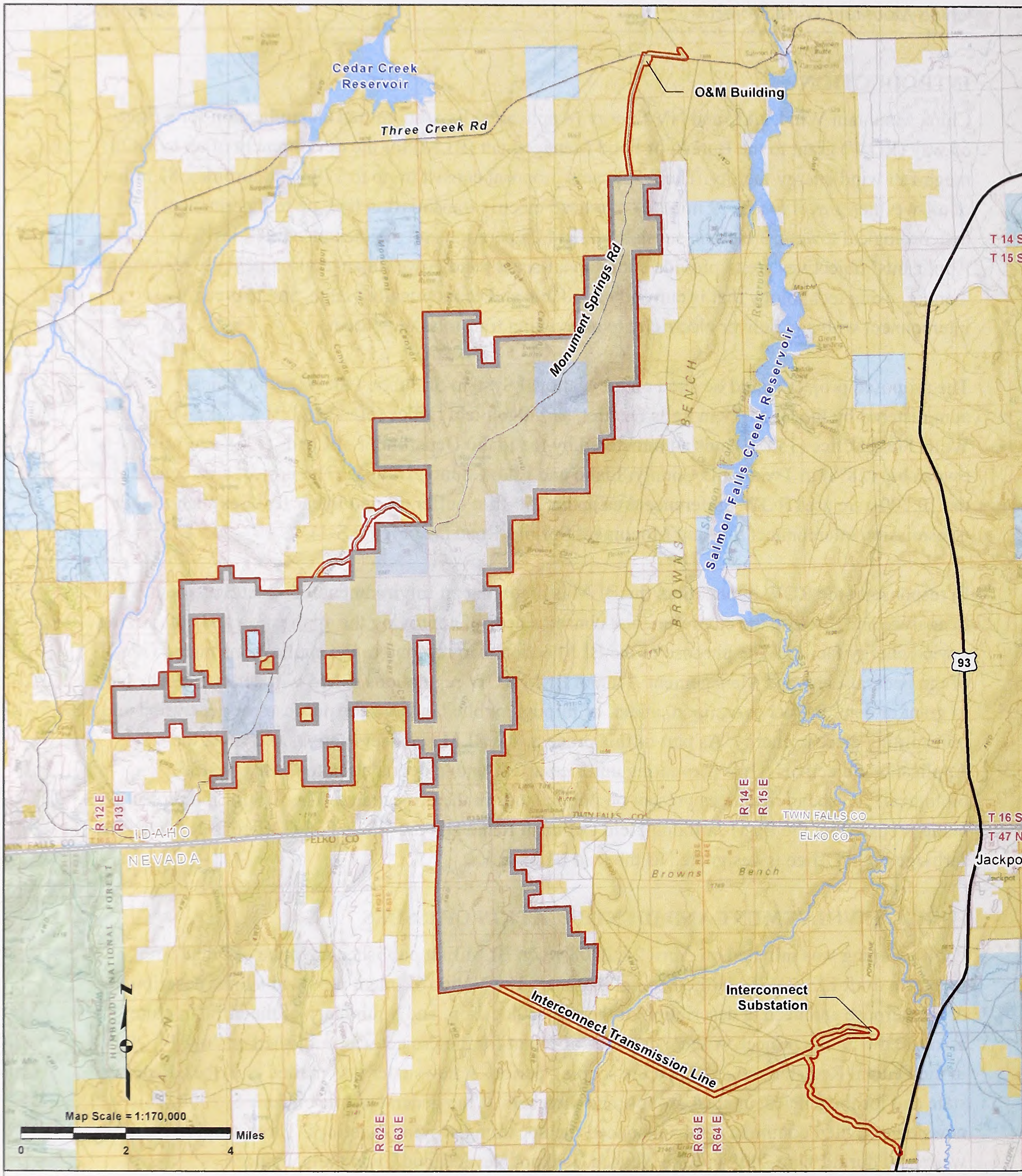


Figure S-1. Project Area

CHINA MOUNTAIN WIND PROJECT EIS

IDAHO - NEVADA

LEGEND

Project Area Boundary

Right-of-way Preference Area

Land Status (Ownership)

BLM Private State USFS

No warranty is made by the Bureau of Land Management for useof the data for purposes not intended by BLM. No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

Based on scoping efforts, comments received as a result of scoping, feedback from Tribal governments, and coordination with cooperating agencies, the BLM identified several issues that were used during the development of the DEIS. These issues related to Greater sage-grouse (sage-grouse) and other wildlife species, tribal treaty rights and interests, cultural resources, visual resources, air quality, soils, water quality, noise, vegetation, public access, recreation, wildfire management, hazardous materials, and revision of the 1987 Jarbidge Resource Management Plan (RMP). Several of these issues (wildlife, tribal treaty rights and interests, cultural resources, and visual resources) were used during the alternative development process. The major issues are summarized here. Chapter 1, Section 1.6.1 identifies the significant issues related to a proposed action and its alternatives.

Greater Sage-Grouse – There were a number of issues raised regarding the sage-grouse:

- The presence of tall structures (wind turbines, meteorological towers, and transmission lines) could lead to avoidance of sage-grouse habitat in the project area and could affect movement of sage-grouse throughout the area.
- Noise and activity associated with construction, operation, and maintenance of the project could disturb sage-grouse lekking activities, nesting, brood-rearing, and other use of habitat in the vicinity of the project area.
- Construction of new transmission lines would create more perch sites and could result in increased predation on sage-grouse eggs and chicks.
- Transmission lines could create a collision hazard for sage-grouse.
- Removal of sagebrush to construct roads and other wind energy facility infrastructure could fragment sage-grouse habitat and reduce its suitability.

Cultural Resources – Construction of the project could disturb and/or destroy cultural resources.

Tribal Treaty Rights and Interests – Construction of the project could affect tribal treaty rights and interests.

Visual Resources – The aesthetic quality of the public view from United States Highway Route 93 (US-93) and other well-traveled or visited locations (such as Lud Drexler Park on the Salmon Falls Creek Reservoir) could be affected by the wind turbines, meteorological towers, transmission lines, roads, and other infrastructure.

ALTERNATIVES

Chapter 2 of the DEIS describes the alternatives developed and analyzed for the proposed China Mountain Wind Project, including the Proposed Action and the No Action Alternative. During the alternative development process, the interdisciplinary team considered public input and information obtained during agency coordination meetings. Nine alternatives are analyzed in detail.

Alternative A is the No Action Alternative; under this alternative, the BLM would deny the right-of-way application and would not allow construction or operation of a wind energy facility.

Alternative B1 is the Proposed Action. Alternative B1 is presented as proposed in the ROW application received by the BLM. The BLM has not modified this proposal. Under the Proposed Action, BLM would grant a right-of-way to the Applicants. This right-of-way grant would authorize the development and operation of a 425 megawatt wind energy facility, consisting of up to 170 wind turbines and 83 miles of all-weather gravel roads. The Proposed Action includes three amendments to the 1987 Jarbidge RMP. The project as proposed conforms to the 1985 Wells RMP. The Proposed Action also includes several project features that are common to all action alternatives (Table S-1).

Alternative B2a is a two-phased approach to the project. Phase I of the project would consist of constructing 100 turbines and 63 miles of road. Phase II would consist of constructing 70 turbines and 20 miles of road. Supporting infrastructure including substations, operation and maintenance facilities, laydown yards, and transmission lines would be constructed under Phase I of the project. A phased approach would allow BLM to monitor the impacts of Phase I on wildlife prior to constructing the entire project. A phased approach would allow BLM to monitor the impacts of Phase I on wildlife prior to constructing the entire project. Phasing would allow BLM to monitor and confirm that impacts are as predicted in Chapter 4. Under this alternative, monitoring results would be used to determine whether unanticipated impacts occurred as a result of Phase I. If unanticipated impacts occur, BLM would conduct appropriate NEPA analysis and adjust requirements prior to issuing a notice to proceed to construct Phase II. Monitoring would occur for 7 years after construction of Phase I. This alternative includes three amendments to the 1987 Jarbidge RMP. This alternative conforms to the 1985 Wells RMP and no amendments are needed.

Alternative B2b is also a two-phased approach similar to Alternative B2a. Phase I consists of constructing 100 turbines and 62 miles of road. Phase II consists of constructing 70 turbines and 21 miles of road. The layout in this alternative differs from Alternative B2a. This alternative includes three amendments to the 1987 Jarbidge RMP. This alternative conforms to the 1985 Wells RMP and no amendments are needed.

Alternative B2c is another two-phased approach; however, the layout of the two phases differs from Alternatives B2a and B2b. Phase I consists of constructing 100 turbines and 72 miles of road. Phase II consists of constructing 70 turbines and 13 miles of road. This alternative includes three amendments to the 1987 Jarbidge RMP. This alternative conforms to the 1985 Wells RMP and no amendments are needed.

Alternative C was developed to address some of the wildlife and visual resource issues in the northern portion of the project area. Under Alternative C, all wind turbines would be sited at least 2 miles from occupied sage-grouse leks. Alternative C would avoid siting turbines in areas of documented high bat use, bat roosts areas, and big game crucial winter range. Alternative C also eliminates the turbines that would be most visible from the BLM Lud Drexler Park. Alternative C

consists of constructing 152 turbines and 80 miles of road. Alternative C includes three amendments to the 1987 Jarbidge RMP. This alternative conforms to the 1985 Wells RMP and no amendments are needed.

Alternative D was developed to reduce potential impacts to sage-grouse movement through the project area. It would eliminate turbines from the northern portion of the project area and in the southern portion of the project area including all turbines in Nevada. Alternative D consists of 124 wind turbines and 72 miles of road. Alternative D includes three amendments to the 1987 Jarbidge RMP. This alternative conforms to the 1985 Wells RMP and no amendments are needed.

Alternative E was designed to conform to the 1987 Jarbidge RMP and 1985 Wells RMP. Alternative E consists of 120 wind turbines and 76 miles of road. This alternative would not amend the 1987 Jarbidge RMP or the 1985 Wells RMP.

Alternative F was developed to address the issue related to cultural sites and tribal values in the project area. Alternative F consists of 105 turbines and 67 miles of road. This alternative includes three amendments to the 1987 Jarbidge RMP. This alternative conforms to the 1985 Wells RMP and no amendments are needed.

Table S-1. Project Features Common to All Action Alternatives.

Project Features	Amount
Turbine capacity	2.0 megawatt
Transmission Interconnect line	19 miles
Project Substations (1 on private land, 1 on Idaho Department of Lands [IDL] land)	2
Interconnect Substation (public land)	1
Meteorological towers (exact location has not yet been determined)	3
Operation and maintenance building (1 on public land, 1 on IDL land)	2
Site compound (public land)	1
Batch plant for mixing concrete (private land)	1
Rock crusher for making road base material (private land)	1
Quarry (private land)	1
Laydown yard (2 on public land, 1 on IDL land, 1 on private land)	4
Fiber optic service connection (public land)	1 mile
Power distribution line for the operation and maintenance building at Three Creek Road (public land)	1 mile

The BLM is also considering three alternate means that would allow access for trucks transporting turbines, towers, substation components, and other construction materials. This access is described as the inbound haul route. The inbound haul route would be used to transport turbines and other large equipment to and from the site during construction, major maintenance activities, and decommissioning. If an action alternative is selected, only one inbound haul route would be

authorized. The 119-mile northern inbound haul route is an existing road in Idaho, with 23 miles on pavement and 96 miles on gravel-surfaced road. Both southern inbound haul route options occur in Nevada. Southern inbound haul route option 1 would be 11 miles in length. This route includes reconstructing 6 miles of existing unpaved road and constructing 5 miles of new road. Southern inbound haul route option 2 would be 13 miles in length. This route includes reconstructing 6 miles of existing unpaved road and constructing 7 miles of new road.

One outbound haul route would occur on existing roads in Idaho; this outbound haul route is 60 miles long. No construction or improvements of this route are needed. Following delivery of turbine components and other materials, all delivery trucks would leave the project on the outbound haul route.

AFFECTED RESOURCES

The affected environment of the resources related to the major issues is summarized here. Chapter 3 of the DEIS describes the existing or affected environment for the project area.

Greater Sage-Grouse

The project area is home to numerous fish and wildlife species, including sage-grouse. The sage-grouse is a candidate for listing under the Endangered Species Act. The project area and adjacent Browns Bench provide important, high quality seasonal habitat for sage-grouse, and sage-grouse in this area have been identified as part of the western stronghold population.

The project area contains approximately 22,500 acres of key sage-grouse habitat and approximately 8,150 acres of R1 habitat. Key habitat is defined as areas of generally intact sagebrush that provides habitat during at least some portion of the year. R1 habitats are classified as areas with "high restoration potential" in areas with limited amounts of sagebrush. Sage-grouse use of the project area varies by season; however, sage-grouse use within the project area is known to occur during all seasons of the year.

Cultural Resources

Historic and cultural resources are defined as nonrenewable remains of past human activity and include buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, or scientific importance.

A review of previous inventories within and adjacent to the project area indicated that numerous historic and cultural resources are known to occur. This review area included a 1-mile buffer around the ROW preference area and all linear facilities (project area). Additional cultural resources inventories (i.e. pedestrian surveys) focused on a survey of 500-foot-wide corridors encompassing approximately 49 percent of the project layout. This resulted in surveys on approximately 4,035 acres and revealed dozens of additional sites. Records searches resulted in the identification of 103 previously recorded cultural resources within the project area and near vicinity. Pedestrian surveys identified 486 cultural resources within the project area, including 10 of the previously recorded sites.

Tribal Treaty Rights and Interests

Consultation with the Shoshone-Paiute Tribes of the Duck Valley Reservation and the Shoshone-Bannock Tribes of the Fort Hall Reservation indicates the presence of a wide range of resources related to tribal rights and/or interests and ongoing use in the project area. These include resources associated with practices like hunting; trapping; fishing; gathering food, medicinal plants, and other natural products; the availability of clean water and healthy plant and animal populations; as well as aboriginal archaeological sites, sacred sites, and traditional cultural properties. Tribal consultation is ongoing.

Visual Resources

The project area is characterized by a dominant north-south trending linear block-fault that rises gradually from the west to crest at China Mountain, and descends precipitously to the east to meet the relatively flat plateau known as Browns Bench. When viewed from on top of this feature, landforms are dominated by rolling hills and canyons draining to the east. When viewed from the nearby US-93 or, the Salmon Falls Creek Reservoir, this landform creates a strong contrast in both elevation and dimensional mass to the surrounding lowland. The project area is largely undeveloped. Existing structures include both primitive and maintained dirt roads and fences. Two roadways located within the project area are maintained: Monument Springs Road, which approaches the project from the north, and BLM Road 1222, which approaches the project from the south. Off-road-vehicle tracks are present throughout the project area; however, the network of lines created from these tracks appears largely absorbed into the surrounding landscape. Less common structures include three parallel electrical transmission lines and poles located to the east of the southern portion of the project area, transmission tower radio broadcasting antennae located on Salmon Butte northeast of the project area, and the 10 meteorological towers that are currently sited within the project area. The majority of the project area is managed as Visual Resource Management (VRM) Class III with smaller portions that are managed as VRM Class II.

The BLM Contrast Rating procedure was used to determine visual contrast that may result from the construction and operation of the project. This method assumes that the extent to which the project results in adverse effects to visual resources is a function of the visual contract between the project and the existing landscape.

ENVIRONMENTAL CONSEQUENCES

Chapter 4 describes the environmental consequences, also referred to as “impacts” or “effects,” of implementing the alternatives, the proposed haul routes, and proposed amendments to the 1987 Jarbidge Resource Management Plan. Impacts are defined as modifications to the environment that are brought on by a proposed action. Impacts can vary in intensity from no change (negligible) or a slightly discernable change (minor), to a noticeable (moderate) or major change in the environmental condition.

Table S-2 displays the impacts of each alternative on the major issues. Table S-3 displays impacts for each inbound haul route.

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Table S-2. Summary Comparison of Impacts for All Alternatives.

Major Issues	Alt. A	Alt. B1	Alt. B2a	Alt. B2b	Alt. B2c	Alt. C	Alt. D	Alt. E	Alt. F
Greater sage-grouse	No new impacts on sage-grouse from the No Action Alternative. Existing impacts would continue.	Removal of 586 acres of key habitat and 194 acres of R1 (Restoration Type 1) habitat would fragment available habitat and reduce cover and food needed by sage-grouse during the spring, summer, and fall, and to a lesser extent during the winter. Presence of tall structures (wind turbines, meteorological towers, and transmission lines) would cause avoidance of 125,056 acres of key and 70,276 acres of R1 habitat and over 76% of available winter habitat (assumes a 4-mile avoidance buffer). Behavioral avoidance would fragment habitat and prevent seasonal movements into and through the project area. Noise and activity from project construction, operation, maintenance, and decommissioning would disturb use of up to 24 leks (4-mile buffer) and cause avoidance of up to 54% of available nesting habitat. An amendment to the 1987 Jarbidge RMP would reduce protection to sage-grouse and their habitats by removing seasonal restrictions and spatial buffers for sage-grouse habitat and leks during construction, operation and maintenance, and decommissioning.	**Phase I** Removal of 389 acres of key and 118 acres of R1 habitat would fragment habitat and reduce cover and food needed by sage-grouse. Presence of tall structures would cause avoidance of 109,268 acres of key, 66,956 acres of R1, and over 75% of available winter habitat. This would fragment habitat and prevent seasonal movements into and through the project area. Noise and activity associated with Phase I would disturb sage-grouse use of up to 23 leks (4-mile buffer), and cause avoidance of up to 52% of available nesting habitat. An amendment to the 1987 Jarbidge RMP would impact sage-grouse as under Alternative B1. Construction and operation of a 19-mile transmission line would increase predation rates of sage-grouse nests and individuals and could pose a risk of collision as under Alternative B1. Phase I could lead to cumulative long-term adverse effects on sage-grouse populations, as under Alternative B1.	**Phase I** Removal of 466 acres of key and 49 acres of R1 habitat would fragment habitat and reduce cover and food needed by sage-grouse. Presence of tall structures would cause avoidance of 123,050 acres of key, 69,250 acres of R1, and over 73% of available winter habitat. This would fragment habitat and prevent seasonal movements into and through the project area Noise and activity associated with Phase I would disturb sage-grouse use of up to 22 leks (4-mile buffer), and cause avoidance of up to 51% of available nesting habitat. An amendment to the 1987 Jarbidge RMP would retain seasonal restrictions and spatial buffers for sage-grouse habitat and leks during construction and decommissioning, with exceptions granted. Construction and operation of a 19-mile transmission line would increase sage-grouse predation rates and could pose a collision risk as under Alternative B1. Phase I could lead to cumulative long-term adverse effects on sage-grouse populations, as under Alternative B1.	**Phase I** Removal of 350 acres of key and 189 acres of R1 habitat would fragment habitat and reduce cover and food needed by sage-grouse. Presence of tall structures would cause avoidance of 121,539 acres of key, 69,345 acres of R1, and over 72% of available winter habitat. This would fragment habitat and prevent seasonal movements into and through the project area. Noise and activity associated with Phase I would disturb sage-grouse use of up to 24 leks (4-mile buffer), and cause avoidance of up to 50% of available nesting habitat. Amendment to the 1987 Jarbidge RMP – same as Alternative B2b. Construction and operation of a 19-mile transmission line would increase predation rates of sage-grouse nests and individuals and could pose a risk of collision as under Alternative B1. Phase I could lead to cumulative long-term adverse effects on sage-grouse populations, as under Alternative B1.	Removal of 519 acres of key and 194 acres of R1 habitat would fragment available habitat and reduce cover and food needed by sage-grouse. Presence of tall structures could cause avoidance of 124,444 acres of key and 69,580 acres of R1 habitat and over 76% of available winter habitat. Behavioral avoidance would fragment habitat and prevent seasonal movements into and through the project area Noise and activity from project construction, operation, maintenance, and decommissioning would disturb use of up to 24 leks (4-mile buffer) and cause avoidance of up to 52% of available nesting habitat. Amendment to the 1987 Jarbidge RMP – same as Alternative B2b. Construction and operation of a 19-mile transmission line would increase predation rates of sage-grouse nests and individuals and could pose a risk of collision as under Alternative B1. Project could lead to cumulative long-term adverse effects on sage-grouse populations, as under Alternative B1.	Removal of 482 acres of key and 136 acres of R1 habitat would fragment available habitat and reduce cover and food needed by sage-grouse. Presence of tall structures would cause avoidance of 123,690 acres of key and 69,579 acres of R1 habitat and over 74% of available winter habitat. Behavioral avoidance would fragment habitat and prevent seasonal movements into and through the project area Noise and activity from project construction, operation, maintenance, and decommissioning would disturb use of up to 23 leks (4-mile buffer) and cause avoidance of up to 51% of available nesting habitat. Amendment to the 1987 Jarbidge RMP – same as Alternative B2b. Construction and operation of a 19-mile transmission line would increase predation rates of sage-grouse nests and individuals and could pose a risk of collision as under Alternative B1. Project could lead to cumulative long-term adverse effects on sage-grouse populations, as under Alternative B1.	Removal of 463 acres of key and 175 acres of R1 habitat would fragment available habitat and reduce cover and food needed by sage-grouse. Presence of tall structures would cause avoidance of 123,240 acres of key and 69,488 acres of R1 habitat and over 74% of available winter habitat. Behavioral avoidance would fragment habitat and prevent seasonal movements into and through the project area Noise and activity from project construction, operation, maintenance, and decommissioning would disturb use of up to 22 leks (4-mile buffer) and cause avoidance of up to 51% of available nesting habitat. No amendment to the 1987 Jarbidge RMP. Provides the most protection of seasonal sage-grouse habitat use during construction, decommissioning, and major maintenance activities. Construction and operation of a 19-mile transmission line would increase predation rates of sage-grouse nests and individuals and could pose a risk of collision as under Alternative B1.	Removal of 425 acres of key and 110 acres of R1 habitat would fragment available habitat and reduce cover and food needed by sage-grouse. Presence of tall structures would cause avoidance of 123,075 acres of key and 69,340 acres of R1 habitat and over 73% of available winter habitat. Behavioral avoidance would fragment habitat and prevent seasonal movements into and through the project area Noise and activity from project construction, operation, maintenance, and decommissioning would disturb use of up to 22 leks (4-mile buffer) and cause avoidance of up to 51% of available nesting habitat. Amendment to the 1987 Jarbidge RMP – same as Alternative B2b. Construction and operation of a 19-mile transmission line would increase predation rates of sage-grouse nests and individuals and could pose a risk of collision as under Alternative B1. Project could lead to cumulative long-term adverse effects on sage-grouse populations, as under Alternative B1.

Table S-2. Summary Comparison of Impacts for All Alternatives (continued).

Major Issues	Alt. A	Alt. B1	Alt. B2a	Alt. B2b	Alt. B2c	Alt. C	Alt. D	Alt. E	Alt. F
Greater sage-grouse (continued)		Construction and operation of a 19-mile transmission line would increase predation rates of sage-grouse nests and individuals in the project area, which could lead to reduced nest success, productivity, and survival. The transmission line also could pose a risk of collision. Design features (perch deterrents and flight diverters) would reduce these risks. Given the losses of sage-grouse habitat in the regional analysis area from wildfire and infrastructure and the importance of the remaining intact sage-grouse habitat within the project area and vicinity, the project could cumulatively lead to long-term adverse effects on sage-grouse populations.	**Phase II** Removal of 208 acres of key and 87 acres of R1 habitat would fragment habitat and reduce cover and food needed by sage-grouse. Presence of tall structures could cause avoidance of an additional 15,788 acres of key, 3,320 acres of R1, and 1% of winter habitat over that of Phase I. This would fragment habitat and prevent seasonal movements into and through the project area. Noise and activity associated with Phase II would disturb sage-grouse use of up to 16 leks (15 overlap those disturbed in Phase I), and cause avoidance of an additional 1% of nesting habitat. RMP amendments would impact sage-grouse as under Alternative B1. Operation of a 19-mile transmission line would increase predation rates of sage-grouse nests and individuals and could pose a risk of collision as under Alternative B1. Phase II could lead to cumulative long-term adverse effects on sage-grouse populations, as under Alternative B1.	**Phase II** Removal of 131 acres of key and 156 acres of R1 habitat would fragment habitat and reduce cover and food needed by sage-grouse. Presence of tall structures could cause avoidance of an additional 2,006 acres of key, 1,026 acres of R1, and 2-3% of winter habitat over that of Phase I. This would fragment habitat and prevent seasonal movements into and through the project area Noise and activity associated with Phase II would disturb sage-grouse use of up to 14 leks (12 overlap those disturbed in Phase I), and cause avoidance of an additional 1% of nesting habitat. RMP amendments – same as Phase I of Alternative B2b. Operation of a 19-mile transmission line would increase predation rates of sage-grouse nests and individuals and could pose a collision risk as under Alternative B1. Phase II could lead to cumulative long-term adverse effects on sage-grouse populations, as under Alternative B1.	**Phase II** Removal of 244 acres of key and 16 acres of R1 habitat would fragment habitat and reduce cover and food needed by sage-grouse. Presence of tall structures could cause avoidance of an additional 3,517 acres of key, 931 acres of R1, and 3-5% of winter habitat over that of Phase I. This would fragment habitat and prevent seasonal movements into and through the project area. Noise and activity associated with Phase II would disturb sage-grouse use of up to 15 leks (all overlap those disturbed in Phase I), and cause avoidance of an additional 2% of nesting habitat. RMP amendments – same as Alternative B2b. Operation of a 19-mile transmission line would increase predation rates of sage-grouse nests and individuals and could pose a risk of collision as under Alternative B1. Phase II could lead to cumulative long-term adverse effects on sage-grouse populations, as under Alternative B1.			Project could lead to cumulative long-term adverse effects on sage-grouse populations, as under Alternative B1.	

Table S-2. Summary Comparison of Impacts for All Alternatives (continued).

Major Issues	Alt. A	Alt. B1	Alt. B2a	Alt. B2b	Alt. B2c	Alt. C	Alt. D	Alt. E	Alt. F
Greater sage-grouse (continued)			**Phase I + Phase II** Removal of 597 acres of key and 205 acres of R1 habitat would fragment habitat and reduce cover and food needed by sage-grouse. Presence of tall structures could cause avoidance of the same amount of key, R1, and winter habitat as under Alternative B1. This would fragment habitat and prevent seasonal movements into and through the project area. Noise and activity from the project would result in disturbance of leks and avoidance of nesting habitat as under Alternative B1. RMP amendments – same as Alternative B1. Construction and operation of a transmission line would increase predation rates of sage-grouse nests and individuals and could pose a collision risk as under Alternative B1. Project could lead to cumulative long-term adverse effects on sage-grouse populations, as under Alternative B1.	**Phase I + Phase II** Removal of 597 acres of key and 205 acres of R1 habitat would fragment habitat and reduce cover and food needed by sage-grouse. Presence of tall structures could cause avoidance of the same amount of key, R1, and winter habitat as under Alternative B1. This would fragment habitat and prevent seasonal movements into and through the project area. Noise and activity from the project would result in disturbance of leks and avoidance of nesting habitat as under Alternative B1. RMP amendments – same as Phase I of Alternative B2b. Construction and operation of a transmission line would increase predation rates of sage-grouse nests and individuals and could pose a collision risk as under Alternative B1. Project could lead to cumulative long-term adverse effects on sage-grouse populations, as under Alternative B1.	**Phase I + Phase II** Removal of 597 acres of key and 205 acres of R1 habitat would fragment habitat and reduce cover and food needed by sage-grouse. Presence of tall structures could cause avoidance of the same amount of key, R1, and winter habitat as under Alternative B1. This would fragment habitat and prevent seasonal movements into and through the project area. Noise and activity from the project would result in disturbance of leks and avoidance of nesting habitat as under Alternative B1. RMP amendments – same as Alternative B2b. Construction and operation of a transmission line would increase predation rates of sage-grouse nests and individuals and could pose a risk of collision as under Alternative B1. Project could lead to cumulative long-term adverse effects on sage-grouse populations, as under Alternative B1.				

Table S-2. Summary Comparison of Impacts for All Alternatives (continued).

Major Issues	Alt. A	Alt. B1	Alt. B2a	Alt. B2b	Alt. B2c	Alt. C	Alt. D	Alt. E	Alt. F
Historic and Cultural Resources	No potential for impacts from construction, O&M, and decommissioning from the No Action Alternative.	Project activities have high potential for direct impacts on an estimated 205 prehistoric, historic, and/or multiple component sites (sites). These resources include 12 Class I, 65 Class II, 28 Class III, 21 Class IV, 67 Class V, 6 Class VI, and 6 of an unspecified class. The Class I and Class VI sites are likely not eligible for listing on the National Register of Historic Places (NRHP). Moderate to high potential for indirect impacts associated with increased access. At least 111 acres of known archaeological sites would be directly impacted by the project footprint. An estimated total of 226 acres would be impacted for all sites.	**Phase I** Project activities have high potential for direct impacts on an estimated 109 sites; including 5 Class I, 42 Class II, 11 Class III, 13 Class IV, 28 Class V, 5 Class VI, and 5 of an unspecified class. The Class I and Class VI sites are likely not eligible for listing on the NRHP. Moderate to high potential for indirect impacts associated with increased access. **Phase II** Project activities have potential for high direct impacts on an estimated 89 sites. These resources include 6 Class I, 21 Class II, 15 Class III, 7 Class IV, 36 Class V, 2 Class VI, and 2 of an unspecified class. The Class I and VI sites are likely not eligible for listing on the NRHP. Moderate to high pot. For indirect impacts assoc. with increased access. **Phase I + Phase II** Project activities have high potential for direct impacts on an estimated 206 sites. At least 113 acres of known archaeological sites would be directly impacted by the project footprint. An estimated total of 233 acres would be impacted for all sites.	**Phase I** Project activities have high potential for direct and indirect impacts on an estimated 169 sites; including 12 Class I, 61 Class II, 26 Class III, 19 Class IV, 37 Class V, 7 Class VI, and 7 of an unspecified class. The Class I and Class VI sites are likely not eligible for listing on the NRHP. Moderate to high potential for indirect impacts associated with increased access. **Phase II** Project activities have potential for high direct impacts on an estimated 48 sites. These resources include 4 Class II, 4 Class III, 4 Class IV, 32 Class V, and 4 of an unspecified class. The Class VI sites are likely not eligible for listing on the NRHP. Moderate to high potential for indirect impacts associated with increased access. **Phase I + Phase II** Project activities have high potential for direct impacts on an estimated 217 sites. At least 113 acres of known archaeological sites would be directly impacted by the project footprint. An est. total of 226 acres would be impacted for all sites.	Project activities have high potential for direct and indirect impacts on an estimated 166 sites; including 9 Class I, 42 Class II, 27 Class III, 13 Class IV, 70 Class V, and 5 of an unspecified class. Based on their limited data potential, the Class I sites are likely not eligible for listing on the NRHP. Moderate to high potential for indirect impacts assoc. with increased access. **Phase II** Project activities have high potential for direct and indirect impacts on an estimated 49 sites. These resources include 3 Class I, 21 Class II, 3 Class III, 9 Class IV, 9 Class V, and 4 Class VI. The Class I and Class VI sites are likely not eligible for listing on the NRHP. Moderate to high potential for indirect impacts associated with increased access. **Phase I + Phase II** Project activities have high potential for direct impacts on 215 sites. At least 111 acres of known archaeological sites would be directly impacted by the project footprint. An est. total of 226 acres would be impacted for all sites.	Project activities have high potential for direct impacts on an estimated 199 sites. These resources include 12 Class I, 62 Class II, 28 Class III, 18 Class IV, 69 Class V, 4 Class VI, and 6 of an unspecified class. Based on their limited data potential, the Class I and Class VI sites are likely not eligible for listing on the NRHP. Moderate to high potential for indirect impacts associated with increased access. At least 110 acres of known archaeological sites would be directly impacted by the project footprint. An estimated total of 226 acres would be impacted for all sites.	Project activities have high potential for direct impacts on an estimated 190 sites. These resources include 12 Class I, 61 Class II, 27 Class III, 19 Class IV, 61 Class V, 4 Class VI, and 6 of an unspecified class. Based on their limited data potential, the Class I and Class VI sites are likely not eligible for listing on the NRHP. Moderate potential for indirect impacts associated with increased access. At least 73 acres of known archaeological sites would be directly impacted by the project footprint. An estimated total of 149 acres would be impacted for all sites.	Project activities have high potential for direct impact to an estimated 201 sites. These resources include 12 Class I, 62 Class II, 29 Class III, 20 Class IV, 68 Class V, 4 Class VI, and 6 of an unspecified class. Based on their limited data potential, the Class I and Class VI sites are likely not eligible for listing on the NRHP. Moderate potential for indirect impacts associated with increased access. At least 97 acres of known archaeological sites would be directly impacted by the project footprint. An estimated total of 198 acres would be impacted for all sites.	Project activities have moderate to high potential for direct impact to an estimated 182 sites. These resources include 13 Class I, 37 Class II, 26 Class III, 16 Class IV, 61 Class V, 4 Class VI, and 5 of an unspecified class. Based on their limited data potential, the Class I sites are likely not eligible for listing on the NRHP. Moderate potential for indirect impacts associated with increased access. At least 52 acres of known archaeological sites would be directly impacted by the project footprint. An estimated total of 105 acres would be impacted for all sites.

Table S-2. Summary Comparison of Impacts for All Alternatives (continued).

Major Issues	Alt. A	Alt. B1	Alt. B2a	Alt. B2b	Alt. B2c	Alt. C	Alt. D	Alt. E	Alt. F
Tribal Treaty Rights and Interests	No direct impacts on sites or locations of tribal concern would occur from the No Action Alternative. Indirect effects due to continued access, recreation, looting of archaeological sites, and similar actions would continue at the current rate.	High potential for direct and indirect impacts on sites and locations of interest to Native Americans from construction activities, the presence of workers, and increased access to the project area, particularly impacts on the physical evidence of past use of the cultural landscape (artifacts, cultural features, and archaeological sites) important to tribal peoples.	**Phase I** There is a reduced potential for direct and indirect impacts compared to Alternative B1. **Phase II** Same as Alternative B1 **Phase I + II** High potential for direct and indirect impacts on sites and locations of interest to Native Americans from construction activities, the presence of workers, and increased access to the project area, particularly impacts on the physical evidence of past use of the cultural landscape important to tribal peoples.	**Phase I** Same as Alternative B2a. **Phase II** Same as Alternative B1 **Phase I + II** Same as Alternative B2a.	**Phase I** Same as Alternative B2a. **Phase II** Same as Alternative B1 **Phase I + II** Same as Alternative B2a.	Slightly decreased potential for direct and indirect impacts compared to Alternative B1.	Reduced potential for direct and indirect impacts compared to Alternative B1.	Same as Alternative D.	Lowest potential for direct and indirect impacts compared to all action alternatives.

Table S-2. Summary Comparison of Impacts for All Alternatives (continued).

Major Issues	Alt. A	Alt. B1	Alt. B2a	Alt. B2b	Alt. B2c	Alt. C	Alt. D	Alt. E	Alt. F
Visual Resources	No new impacts on visual resources from the No Action Alternative. Current impacts would continue. No plan amendments required for the 1987 Jarbidge RMP.	Overall, construction and operation of the project would result in short- and long-term contrast in form, line, color, and texture from all viewer positions. Strong contrast would be perceived from the Monument Springs Road, Salmon Falls Creek, and Southern Primitive Road Network viewsheds. Weak contrast would be perceived from the US-93 viewshed. 44 – 170 turbines would be visible from 1 or more of 12 Key Observation Points (KOPs). An amendment to the 1987 Jarbidge RMP would reclassify 3,298 acres of VRM Class II lands, and 9,871 acres of VRM Class III lands.	**Phase I** The level of contrast perceived from each viewshed would be the same as that described for Alternative B1. 31 – 100 turbines would be visible from 1 or more of 12 KOPs. An amendment to the 1987 Jarbidge RMP would reclassify VRM Class II and Class III lands as described for Alternative B1. **Phase II** Same as described for Alternative B1. **Phase I + Phase II** Visual resource impacts would be the same as for Alternative B1.	**Phase I** Strong contrast would be perceived from Monument Springs Road and Salmon Falls Creek viewsheds. Weak Contrast would be perceived from the Southern Primitive Road Network and US-93 viewsheds. 29 – 100 turbines would be visible from 1 or more of 12 KOPs. An amendment to the 1987 Jarbidge RMP would reclassify VRM Class II and Class III lands as described for Alternative B1. **Phase II** Same as described for Alternative B1. **Phase I + Phase II** Visual resource impacts would be the same as for Alternative B1.	**Phase I** Strong contrast perceived from Monument Springs Road and Southern Primitive Road Network viewsheds. Moderate contrast would be perceived from the Salmon Falls Creek viewshed. Weak Contrast would be perceived from the US-93 viewshed. 27 – 100 turbines would be visible from 1 or more of 12 KOPs. An amendment to the 1987 Jarbidge RMP would reclassify VRM Class II and Class III lands as described for Alternative B1. **Phase II** Same as described for Alternative B1. **Phase I + Phase II** Visual resource impacts would be the same as for Alternative B1.	Strong contrast would be perceived from Monument Springs Road, Salmon Falls Creek, and Southern Primitive Road Network viewsheds. Weak contrast would be perceived from the US-93 viewshed. 26 – 152 turbines would be visible from 1 or more of 12 KOPs. An amendment to the 1987 Jarbidge RMP would reclassify 3,298 acres of VRM Class II lands, and 7,911 acres of VRM Class III lands.	Strong contrast would be perceived from Monument Springs Road and Salmon Falls Creek viewsheds. Weak contrast would be perceived from the Southern Primitive Road Network and US-93 viewsheds. 26 – 124 turbines would be visible from 1 or more of 12 KOPs. An amendment to the 1987 Jarbidge RMP would reclassify 2,358 acres of VRM Class II lands, and 7,652 acres of VRM Class III lands.	Strong contrast would be perceived from Monument Springs Road and Southern Primitive Road Network viewsheds. Moderate contrast would be perceived from Salmon Falls Creek viewshed. Weak contrast would be perceived from US-93 viewshed. 17 – 120 turbines would be visible from 1 or more of 12 KOPs. No amendments to the 1987 Jarbidge RMP would be considered under this alternative.	Strong contrast would be perceived from Monument Springs Road and Salmon Falls Creek viewsheds. Weak contrast would be perceived from the Southern Primitive Road Network and US-93 viewsheds. 26 – 105 turbines would be visible from 1 or more of 12 KOPs. An amendment to the 1987 Jarbidge RMP would reclassify 1,420 acres of VRM Class II lands, and 6,394 acres of VRM Class III lands.

Table S-3. Summary Comparison of Resource Impacts by Inbound Haul Route.

Major Issue	Northern Inbound Haul Route	Southern Inbound Haul Route Option 1	Southern Inbound Haul Route Option 2
Greater sage-grouse	Removal of 3 acres of key habitat and 7 acres of R1 (Restoration Type I) habitat would result in a minor amount of habitat fragmentation and would reduce cover and food necessary for sage-grouse. Noise and activity associated with upgrade and use of this haul route during construction and decommissioning could disturb sage-grouse use of up to 32 leks within a 4-mile buffer of the route (12 overlap project area buffer) and could cause avoidance of 161,412 acres of key habitat and 254,357 acres of R1 habitat.	Removal of 7 acres of key habitat and 77 acres of R1 habitat would fragment available habitat and reduce cover and food necessary for sage-grouse. Noise and activity associated with construction and use of this haul route during construction and decommissioning could disturb sage-grouse use of up to 7 leks within a 4-mile buffer of the route (all overlap project area buffer) and could cause avoidance of 35,425 acres of key habitat and 39,770 acres of R1 habitat. Use of the route by the general public would likely increase and would increase disturbance to grouse during operation and maintenance.	Removal of 15 acres of key habitat and 73 acres of R1 habitat would fragment available habitat and reduce cover and food necessary for sage-grouse. Noise and activity associated with construction and use of this haul route during construction and decommissioning could disturb sage-grouse use of up to 9 leks within a 4-mile buffer of the route (8 overlap project area buffer) and could cause avoidance of 37,317 acres of key habitat and 39,315 acres of R1 habitat. Use of the route by the general public would likely increase and would increase disturbance to grouse during operation and maintenance.

Table S-3. Summary Comparison of Resource Impacts by Inbound Haul Route.

Major Issue	Northern Inbound Haul Route	Southern Inbound Haul Route Option 1	Southern Inbound Haul Route Option 2
Historic and Cultural Resources	Low potential for direct impacts. About 39 acres of road reconstruction activities would occur and would impact an estimated 5 archaeological sites.	High potential for direct impacts on several archaeological sites. High potential for indirect impacts associated with increased access. About 86 acres of road construction and reconstruction activities would impact at least 2 known archaeological sites and an estimated 10 sites would be impacted overall. This option would also have direct impacts on the historic Toana Wagon Road.	High potential for direct impacts on numerous archaeological sites. High potential for indirect impacts associated with increased access. About 90 acres of road construction and reconstruction activities would impact at least 1 known archaeological site and an estimated 10 sites would be impacted overall. This option would also have direct impacts on the historic Toana Wagon Road.
Tribal Treaty Rights and Interests	May result in direct and indirect impacts on sites and locations of interest to Native Americans.	Same as northern inbound haul route. Total impacts from use of this route are likely considerably greater than those for the northern inbound haul route.	Same as option 1.
Visual Resources	There would be a weak contrast in form, line, color, and texture resulting from construction and operation of the northern inbound haul route. Minor temporary impacts on 38.9 acres of land managed as VRM Class III in the Jarbidge Field Office.	Overall, a strong contrast is anticipated due to construction and operation of the route. Major, long-term impacts are expected to occur on 19.2 acres of land managed as VRM Class II lands and 23.2 acres of land managed as VRM Class III land in the Wells Field Office from construction and reconstruction of this route.	Overall, a strong contrast is anticipated due to construction and operation of the route. Major, long-term impacts are expected to occur on 13.6 acres of land managed as VRM Class II and 53.4 acres of land managed as VRM Class III in the Wells Field Office from construction and reconstruction of this route.

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ACRONYMS

AAQS	Ambient Air Quality Standards
ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
AERMET	A Meteorological Preprocessor for AERMOD
AERMOD	AMS/EPA Regulatory Model
AERSURFACE	AMS/EPA Regulatory Model Surface Characteristics Development Tool
AFS	Air Facility System
AMP	Allotment Management Plan
AMR	Appropriate Management Response
AMS	American Meteorological Society
aMW	Average Megawatt
Applicants	China Mountain Wind LLC and NV Energy
ANSI	American National Standards Institute
APE	Area of Potential Effects
APLIC	Avian Power Line Interaction Committee
ARPA	Archeological Resources Protection Act
AQI	Air Quality Index
ASTM	American Society for Testing of Materials
AUM	Animal Unit Month
BA	Biological Assessment
BAR	Burned Area Rehabilitation
BLM	Bureau of Land Management
BMP	Best Management Practices
C	Celsius
CAA	Clean Air Act
CDC	Conservation Data Center
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	Methane
CMW	China Mountain Wind, LLC
CO	Carbon monoxide
CO_2	Carbon Dioxide
CORRACTS	RCRA Corrective Actions
cps	Cycles Per Second
CRMMP	Cultural Resources Mitigation and Monitoring Plan
dB	Decibel
dBA	A-weighted decibel

DNA	Determination of NEPA Adequacy
DRMP	Draft Resource Management Plan
DTI	Department of Trade and Industry
dv	Deciview
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
EPS	Economic Profiling System
ERNS	Emergency Response Notification System
ES	Emergency Stabilization
ESA	Endangered Species Act
ESI	Ecological Site Inventory
ESR	Emergency Stabilization and Rehabilitation
^{o}F	Degrees Fahrenheit
FAA	Federal Aviation Administration
FAR	Functioning at-risk
FAR-DOWN	Function at-risk with a Downward Trend
FAR-NA	Function at-risk with no apparent trend
FAR-UP	Functioning at-risk with an Upward Trend
FHWA	Federal Highway Administration
FLAG	Federal Land Managers' Air Quality Related Values Workgroup
FLPMA	Federal Land Policy and Management Act
FM	Fuel model
FMP	Fire Management Plan
FMU	Fire Management Unit
FONSI	Finding of No Significant Impact
FRCC	Fire Regime Condition Class
FRM	Federal Reference Monitors
FTA	Federal Transit Administration
g/cc	Soil Per Unit Volume
G rank	Global Rank
GHG	Greenhouse gas
GIS	Geographic Information System
GMU	Game Management Unit
HCR	Habitat Condition Ranking
HFR	Historic Fire Regimes
HSE	Health Safety and Environmental
Hz	Hertz
IAAQS	Idaho Ambient Air Quality Standards
IBLA	Interior Board of Land Appeals
IDAPA	Idaho Administrative Procedures Act

IPDES	Idaho Pollutant Discharge Elimination System
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDL	Idaho Department of Lands
ID Team	Interdisciplinary Team
IDVMD	Idaho Vertebrate Modeling Database
IDWR	Idaho Department of Water Resources
IFWIS	Idaho Fish and Wildlife Information System
ISAC	Idaho Sage-grouse Advisory Committee
ITD	Idaho Transportation of Department
kHz	Kilohertz
km	Kilometer
KOP	Key Observation Point
kV	Kilovolt
kW	Kilowatt
L_{dn}	Day-Night Average Noise Level
L_{eq}	Equivalent Sound Level
Leks	Sage-Grouse Strutting Ground
LEPA	Lepidium papilliferum
LLC	Limited Liability Corporation
L_{max}	Maximum Equivalent Sound Level
L_{min}	Minimum Equivalent Sound Level
LORS	Laws, Ordinances, Regulations and Standards
LT	Long-term Measurement Location
m	Meter
mi^2	Square miles
MOA	Memorandum of Agreement
mph	Miles Per Hour
MUA	Multiple Use Area
MW	Megawatt
N_2O	Nitrous Oxide
N/A	Not Applicable
NAAQS	National Ambient Air Quality Standards
NAD	North American Datum
NAGPRA	Native American Graves Protection and Repatriation Act
NDEP	Nevada Division of Environmental Protection
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NEAP	Natural Events Action Plan
NEPA	National Environmental Policy Act
NEPT	National Environmental Performance Track
NF	Non-functioning

NHD	US Geological Survey National Hydrography Dataset
NHPA	National Historic Preservation Act of 1966
NOI	Notice of Intent
NO_2	Nitrogen dioxide
NO_X	Nitrogen Oxides
NHR	Northern haul route
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NRRS	Natural Resource Recreation Setting
NRS	Nevada Revised Statutes
NvAAQS	Nevada Ambient Air Quality Standards
NVCRIS	Nevada Cultural Resource Information System
NWCG	National Wildfire Coordinating Group
O_3	Ozone
O&M	Operation and Maintenance
OHV	Off-highway Vehicle
ORV	Off-road-Vehicle
PA	Project Area
Pb	Lead
PCS	Permit Compliance System
PEIS	Programmatic Environmental Impact Statement
PFC	Proper Functioning Condition
PLS	Pure live seed
PM	Particulate Matter
$PM_{2.5}$	Particulate matter with an aerodynamic diameter equal to or less than 2.5 microns
PM_{10}	Particulate matter with an aerodynamic diameter equal to or less than 10 microns
PPM	Parts Per Million
PNC	Potential Natural Community
POD	Plan of Development
project	China Mountain Wind Power Project
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
ReGAP	Regional Gap Analysis Project
RES	Renewable Energy Systems America Development Inc.
RFFA	Reasonable Foreseeable Future Action
RHCA	Riparian Habitat Conservation Area
RMP	Resource Management Plan
ROD	Record of Decision

ROS	Recreational Opportunities Spectrum
ROW	Right-of-Way
RPS	Renewable Portfolio Standard
RSC	Recreation Setting Characteristics
S rank	State Rank
SAD	Surface Area Disturbance
SCADA	Supervisory Control and Data Acquisition
SCIIDC	South Central Idaho Interagency Dispatch Center
SH	State Highway
SH-51	State Highway 51
SHPO	State Historic Preservation Officer
SHR1	Southern Haul Route Option 1
SHR2	Southern Haul Route Option 2
SIC	Standard Industrial Classification Codes
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SOP	Standard Operating Procedure
SPCCP	Spill Prevention Control and Countermeasures Plan
SPL	Sound Pressure Level
SQRU	Scenic Quality Rating Units
SRMA	Special Recreation Management Area
SRP	Snake River Plain
SSA	Stipulated Settlement Agreement
SSP	Special Status Plant
SSURGO	Soil Survey Geographic Database
ST	Short-term Measurement Location
SWIP	Southwest Intertie Project
SWPPP	Storm Water Pollution Prevention Plan
TAC	Technical Advisory Committee
TCP	Traditional Cultural Property
TES	Threatened, Endangered and Sensitive
TMDL	Total Maximum Daily Load
TRI	Toxic Release Inventory
TSD	Treatment Storage and Disposal
TWA	Time-weighted Average
μg	Microgram, 10^{-6} Gram
$\mu g/m^3$	Micrograms per Cubic Meter
μm	Micrometer, 10^{-6} Meter
USGS	United States Geological Survey
U.S.	United States
USACE	United States Army Corps of Engineers
USC	United States Code

USDA	United States Department of Agriculture
USDI	United States Department of Interior
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
US-30	United States Highway Route 30
US-93	United States Highway Route 93
USTs	Underground Storage Tanks
USU	Utah State University
VHF	Very High Frequency
VMA	Vegetation Management Areas
VRM	Visual Resource Management
VSG	Vegetation Sub-group(s)
WOMP	Wildlife Operations Monitoring Plan
WUI	Wildland Urban Interface
WSA	Wilderness Study Area
WSR	Wild and Scenic River
WWG	Wildlife Working Group

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CHAPTER 1 – PURPOSE AND NEED

Chapter 1

1.1 INTRODUCTION

This Environmental Impact Statement (EIS) has been prepared to disclose and analyze the environmental consequences of the proposed China Mountain Wind Project (the project) and from amending the 1987 Jarbidge Resource Management Plan (RMP). China Mountain Wind, LLC (CMW), a wholly owned subsidiary of Renewable Energy Systems Americas Inc. (RES), and NV Energy (Applicants) have submitted an application for a right-of-way (ROW) grant to the Bureau of Land Management (BLM). The project would develop up to a 425 megawatt (MW) wind energy facility, consisting of up to 170 wind turbines, 83 miles of all-weather gravel roads, 19 miles of overhead electric transmission line, up to three permanent meteorological towers, three electric substations, and two operation and maintenance facilities. The project would generate and deliver electrical power to the electrical transmission grid via an NV Energy transmission line located about 8 miles away.

The project area is located in south-central Idaho and northeast Nevada, southwest of Rogerson, Idaho and west of the town of Jackpot, Nevada (Figure 1-1), and is referred to as the China Mountain area.

The EIS for the project is being prepared by the BLM Jarbidge Field Office in Idaho and the Wells Field Office in Nevada. The Jarbidge Field Office is designated as the lead BLM office (Memorandum IDI 35183 [933] signed January 30, 2008). The project would be sited on the National System of Public Lands (public lands) administered by the BLM Twin Falls District, Jarbidge Field Office (50%) and BLM Elko District, Wells Field Office (15%), lands administered by the Idaho Department of Lands (IDL) (7%), and private ownership (28%) in Twin Falls County, Idaho and Elko County, Nevada. Issuance of a ROW grant for the construction, operation, and maintenance of the wind energy facility on public lands would be required. The EIS assists the BLM in project planning and ensuring compliance with the National Environmental Policy Act of 1969, as amended (NEPA) and Federal Land Policy and Management Act of 1976 (FLPMA).

In response to a recommendation in the President's 2001 National Energy Policy (National Energy Policy Development Group, 2001), the BLM developed the 2005 Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States (Wind PEIS) (Bureau of Land Management [BLM], 2005a) to evaluate issues associated with future wind energy development on western public lands administered by BLM. The Wind PEIS analyzed a Wind Energy Development Program within the BLM. The Record of Decision (ROD) for the Wind PEIS was signed on December 15, 2005 and established policies and best management practices (BMPs) for wind energy ROW authorizations (BLM, 2005b). The ROD amended 52 BLM land-use plans, including the 1987 Jarbidge RMP and 1985 Wells RMP. The Wind PEIS shows an area with high wind resource potential in the southeast portion of the Jarbidge Field Office. BLM Washington Office Instruction Memorandum 2009-043 (BLM, 2008a) clarifies BLM wind energy development policies and BMPs provided in the Wind PEIS. Even though BLM has completed the Wind PEIS for implementation of a wind energy development program, site-specific environmental analyses are needed before implementing individual wind energy projects.

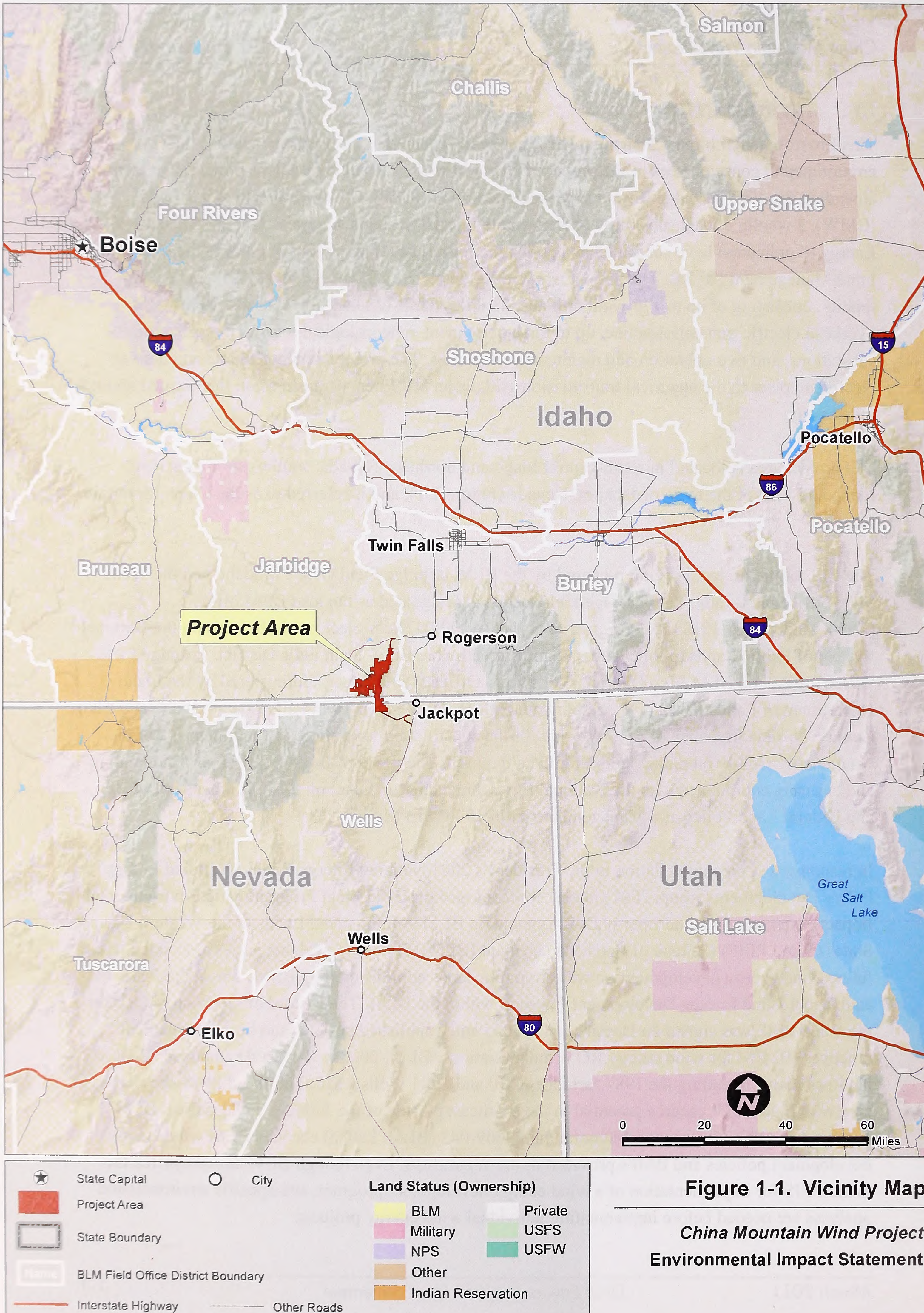


Figure 1-1. Vicinity Map

China Mountain Wind Project

Environmental Impact Statement

1.2 PROJECT HISTORY

On March 15, 2002, CMW filed a ROW application for a wind energy development project in the China Mountain area. The BLM Jarbidge Field Office assisted CMW in modifying and revising their application request for a wind energy site testing and monitoring ROW. The proposed ROW included wind energy testing facilities (meteorological towers) and an interest in the site testing and monitoring project area that would preclude other wind energy ROW applications for the term of the renewable 3-year ROW. In response to the application, BLM prepared Environmental Assessment (EA) No. ID-02-079.

On October 6, 2003, the Idaho BLM Jarbidge Field Office signed a decision record approving installation of four meteorological towers. Western Watersheds Project and Idaho Bird Hunters filed an appeal and sought a stay of BLM Decision Record for the four meteorological towers on November 20, 2003. The Interior Board of Land Appeals (IBLA) denied the appellants' petition to stay the decision on January 5, 2004. On January 25, 2007, IBLA affirmed the October 6, 2003 Decision Record and concluded that the Jarbidge Field Office Manager properly decided to grant CMW a ROW for four meteorological towers (IBLA 2004-0060). The ROW was granted to CMW in 2004.

On March 12, 2007, the Nevada BLM Wells Field Office signed a decision record for two metrological towers (Case File NVN-082722). Only one of the metrological towers was constructed.

A ROW amendment application was filed by CMW on June 27, 2008 for an additional three meteorological towers and an associated EA was prepared (EA No. ID-210-2008-284). A decision record was signed on October 30, 2009 authorizing construction of two of the three meteorological towers identified in the EA (the two southern towers). A Finding of No Significant Impact was signed on October 30, 2009 by the Jarbidge Field Office concluding that the construction of the meteorological towers as described in the EA would not significantly affect the quality of the human environment. The two meteorological towers were constructed in November 2009. The ROW grant allows the meteorological towers to be in place for 3 years.

To date, a total of 10 meteorological towers have been constructed in the project area on private land, IDL lands, and BLM managed public lands in Nevada and Idaho. These meteorological towers collect data that supplement the computer simulations and measure wind speed, wind variation by elevation, wind shear, and seasonal wind changes within the project area.

On May 1, 2007, CMW submitted a ROW application to the BLM Jarbidge Field Office and Wells Field Office to construct and operate a wind energy facility on China Mountain. This application was accepted by BLM on June 1, 2007 (Serial Numbers IDI-35183 and NVN-84663). In May 2008, CMW and NV Energy entered into a Joint Development Agreement. Subsequently, CMW amended their ROW application by adding NV Energy. The amended ROW application assigned 50 percent of the ROW to CMW and 50 percent to NV Energy.

1.3 PURPOSE AND NEED

The purpose and need for the BLM's action is to respond to a FLPMA right-of-way application request submitted by CMW to construct, operate, maintain, and decommission a commercial scale wind powered electric generation facility and associated infrastructure on public lands administered by the BLM. China Mountain LLC has applied to build a project that can generate up to 425 MW of electricity and they have a power purchase agreement with NV Energy to provide 200 MW of power. This action will help the BLM meet the management objectives in the Energy Policy Act of 2005 (Title II, Section 211) which establishes a goal for the Secretary of the Interior to approve 10,000 MWs of electricity from non-hydropower renewable energy projects located on public lands. This action also furthers the purpose of Secretarial Order 3285 (March 11, 2009) and BLM Wind Energy Development Policy (Instruction Memorandum 2009-043) which establish the development of environmentally responsible renewable energy as a priority for the Department of the Interior. In accordance with FLPMA (Section 103[c]) public lands are to be managed for multiple uses taking into account the long-term needs of future generations for renewable and non-renewable resources. The Secretary of the Interior with respect to public lands is authorized to grant rights-of-way for systems of generation, transmission, and distribution of electric energy (Section 501[a][4]).

1.4 THE APPLICANTS

The Applicants for the project are China Mountain Wind, LLC, a wholly owned subsidiary of RES, and NV Energy Inc., a Nevada based utility. RES is a privately owned wind and solar energy development company headquartered in Denver, Colorado with their parent company headquartered in the United Kingdom. RES has a long history of developing, constructing and operating wind power projects. RES has constructed 62 operational wind projects with a capacity of more than 2,500 MW around the world and has an additional 1,540 MW under construction. RES currently operates wind energy facilities in the states of Texas and Washington and has additional energy generation projects under and/or proposed for development in the states of California, Washington, Colorado, Oregon, Texas, Montana, and Minnesota.

NV Energy, Inc. is a holding company headquartered in Nevada whose principal subsidiaries, Nevada Power Company and Sierra Pacific Power Company, do business as NV Energy. The company services a 54,500-square-mile service territory that stretches north to south from Elko to Laughlin. NV Energy provides a wide range of energy services and products to approximately 2.4 million citizens of Nevada as well as approximately 40 million tourists annually.

The Applicants' objectives are to provide commercial-scale wind power in an environmentally responsible manner, using technology that is currently available, technically feasible, and economically viable, and that can interconnect with and deliver electricity to an existing transmission system. The project is designed to generate up to 425 MW and CMW has entered into a power purchase agreement with NV Energy to provide 200 MW. Therefore, the project would need to generate at least 200 MW to be economically viable.

The Applicants are proposing this project to enhance the region's electrical reliability and help satisfy the increased demand for renewable electricity in Nevada. The Applicants propose to do this by efficiently capturing wind resources at sites with an outstanding wind potential that are close to existing transmission lines, and maximizing energy generation. The China Mountain area is about 8 miles from an existing transmission line with available capacity and the site exhibits excellent potential for wind power. Within the project area, about 23,200 acres have fair to outstanding wind resource potential (Figure 1-2). Of this amount, about 2,470 acres are classified as Class 5 (excellent) or Class 6 (outstanding) wind resource potential (Department of Energy, 2002). Almost all the excellent and outstanding wind resources at China Mountain are located on public lands.

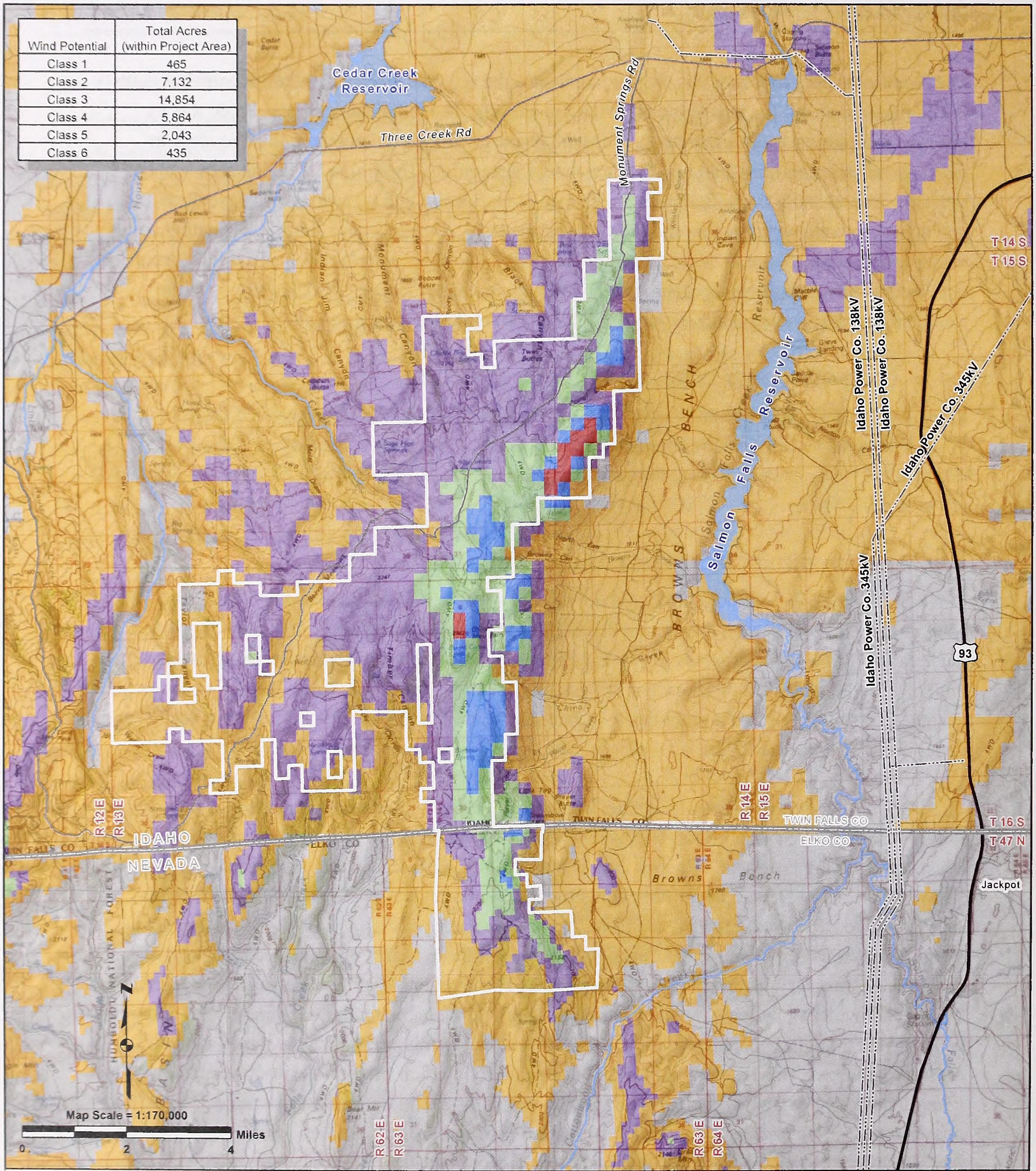
1.5 CONFORMANCE WITH BLM LAND USE PLANS

Public lands involved in the siting of the project are located within the Jarbidge Field Office and Wells Field Office and are currently managed under the jurisdiction of the 1987 Jarbidge RMP (BLM, 1987) as amended (1987 Jarbidge RMP) and the 1985 Wells RMP (BLM, 1985) as amended (1985 Wells RMP).

1.5.1 1987 JARBIDGE RESOURCE MANAGEMENT PLAN

The ROD for the 1987 Jarbidge RMP did not discuss specific projects such as applications for wind energy. Page II-1, paragraph four states, "Under this RMP, there would be 1,467,180 acres public land open to ROW application for utility lines or other projects needed for public or private use. A total of 223,293 acres will be protected against issuance of rights-of-way." The project area is in a designated Multiple Use Area (number 15 – Jarbidge Foothills) that is open to ROW application under the 1987 Jarbidge RMP.

The 1987 Jarbidge RMP was amended in December 2005 by the Record of Decision for the Programmatic EIS for Wind Energy Development. The type of action proposed is considered consistent with the President's Energy Policy Act of 2005, Advanced Energy Initiative of 2006, and BLM Wind Energy Development Policy, Instruction Memorandum No. 2009-043 (BLM, 2008a). The 1987 Jarbidge RMP was amended as follows: "Programmatic policies and BMPs in the proposed Wind Energy Development Program would be adopted." Relevant BMPs have been included in the design of the project and are listed in Appendix 2A. The Jarbidge RMP was also amended as follows: "Wind energy development would be restricted from wildlife habitat where adverse effects could not be mitigated." To mitigate adverse effects the BLM worked with the Applicants to address known resource concerns. This resulted in the Applicants modifying their original design and updating the Plan of Development. Modifications included relocation of the transmission interconnect line, where possible, to a distance greater than 2-miles from known sage-grouse leks, and to avoid all travel on the China Creek Road (also known as Browns Bench Road) where sage-grouse use is high. The Applicants also included BMPs in their Plan of Development to mitigate impacts to wildlife. In addition to working with the Applicants, the BLM identified design features that would apply to all action alternatives. These design features are designed to minimize environmental and operational impacts, including impacts to wildlife. Therefore, the proposal conforms to these amendments to the Jarbidge RMP.



Wind Potential	Total Acres (within Project Area)
Class 1	465
Class 2	7,132
Class 3	14,854
Class 4	5,864
Class 5	2,043
Class 6	435

LEGEND

Right-of-way Preference Area

Existing Transmission Line

Average Annual Wind Resource Potential (at 50-meter height)

- Class 1, Poor (0-200 W/m^2)
- Class 2, Marginal (200-300 W/m^2)
- Class 3, Fair (300-400 W/m^2)
- Class 4, Good (400-500 W/m^2)
- Class 5, Excellent (500-600 W/m^2)
- Class 6, Outstanding (600-800 W/m^2)
- Class 7, Superb (>800 W/m^2)

Wind Data Source: TrueWind Solutions/NREL (April, 2002)

Figure 1-2. Wind Testing & Monitoring Area

CHINA MOUNTAIN WIND PROJECT

IDAHO - NEVADA

The project as proposed is not in conformance with the 1987 Jarbidge RMP and its amendments. Therefore, amendments to the 1987 Jarbidge RMP would be required for some of the action alternatives. Project components that would not conform to the 1987 Jarbidge RMP follow:

- Portions of the project would occur in areas classified as VRM Class II. Siting turbines in these areas would not conform to the objectives for this VRM classification.
- Construction, operation and maintenance, and/or decommissioning activities would occur during periods when seasonal restrictions for special status species and crucial wildlife habitat would apply.
- Portions of the project would occur within 500 feet of reservoirs, ponds, lakes, streams, wetlands, marshes, and/or riparian areas, where year-round occupancy is restricted.

The planning action is to amend the 1987 Jarbidge RMP as a part of this EIS. Amendments to the 1987 Jarbidge RMP will be prepared in accordance with the BLM Land Use Planning Handbook and the planning regulations at 43 Code of Federal Regulations (CFR) part 1600. To initiate the plan amendment process, a Notice of Intent to prepare a land use plan amendment was published in the Federal Register in October 2009, as described further in Section 1.7. Additional details regarding the proposed amendments are displayed in Chapter 2.

The BLM is currently revising the 1987 Jarbidge RMP and a draft RMP/EIS was publicly released in September 2010. Until the Record of Decision is signed on the current Jarbidge RMP/EIS revision, the 1987 Jarbidge RMP continues to apply. Because the timing of the decisions for this project and the RMP revision will likely occur at different times, the BLM has determined that the 1987 Jarbidge RMP may need to be amended in order to implement the proposed actions being analyzed in the China Mountain Wind Project Draft EIS.

1.5.2 1985 WELLS RESOURCE MANAGEMENT PLAN

The 1985 Wells RMP was also amended in December 2005 by the Record of Decision for the Programmatic EIS for Wind Energy Development. The type of action proposed is considered consistent with the President's Energy Policy Act of 2005, Advanced Energy Initiative of 2006, and BLM Wind Energy Development Policy, Instruction Memorandum No. 2009-043 (BLM, 2008a). The 1985 Wells RMP was amended to say, "Programmatic policies and BMPs in the proposed Wind Energy Development Program would be adopted." Relevant BMPs have been included in the design of the project and are listed in Appendix 2A.

The project as proposed conforms to the Wells RMP. The Wells RMP has a number of requirements to protect resources during construction and operation of this project. One such requirement is "Time-of-day and/or time-of-year restrictions will be placed on construction activities associated with transmission and utility facilities that are in the immediate vicinity or would cross crucial sage-grouse, crucial deer and pronghorn antelope winter habitats, antelope kidding areas, or raptor nesting areas" (Wells RMP ROD, p. 22, #10). The Wind PEIS provides additional protections through

required implementation of best management practices. In summary, an amendment is not necessary and there are adequate protections for other resources.

Wind energy projects, such as China Mountain are not specifically provided for in the Wells RMP ROD or subsequent amendments (except see item 3 below). For visual resources, the project would be designed to conform to the existing VRM classes. Although wind energy projects are not proscribed, they are consistent with:

1) The BLM's multiple use mandate from FLPMA;

2) The objective for Lands in the Wells RMP ROD which calls for "To allow land use authorization based on long range goals." (Wells RMP ROD, p. 13). Wind energy development is a long-range national goal.

3) The BLM's national Wind PEIS which assessed the potential for wind energy development on public lands in the Western U.S. The ROD for the Wind PEIS specifically amended the Wells RMP, to identify wind energy development as an approved usage in the RMP and added this language: "Programmatic policies and BMPs in the proposed Wind Energy Development Program would be adopted." Also, BLM Washington Office Instruction Memorandum No. 2009-043, Wind Energy Development Policy, provides current guidelines for wind energy applications and processing. The IM provides additional evidence that wind energy projects such as China Mountain are supported by national and BLM policy "within acceptable areas."

1.6 IDENTIFICATION OF ISSUES

Scoping is the term used in the Council on Environmental Quality Regulations implementing NEPA [40 CFR 1501.7] to define the early and open process for determining the issues to be addressed in the EIS. Scoping provides an avenue to involve the public in identifying significant issues related to potential land management actions and helps eliminate extraneous discussion in the NEPA document (i.e., issues that are not significant and can therefore be eliminated from detailed analysis). Internal and external input on the issues, alternatives, and potential direct, indirect, and cumulative impacts are part of the scoping process.

Public scoping was initiated on April 21, 2008 when BLM published the NOI to prepare an EIS in the Federal Register. The NOI provided a brief description of the purpose and need of the project, a description of its location, a summary of the infrastructure associated with the Proposed Action, and stated BLM's plan to hold scoping meetings. The second NOI for the project was published on July 14, 2008 in the Federal Register that extended the scoping period from 60 days to 90 days. A scoping notice newsletter was prepared and mailed to Tribes, Federal, state and local agencies, interest groups, and members of the general public on June 5, 2008 and posted to the Idaho State BLM web page on June 9, 2008. A legal notice and press release were also distributed to local and regional

media June 19 through 21, 2008. Three public scoping meetings were held during June 2008 in Elko Nevada, Jackpot Nevada, and Twin Falls, Idaho.

An additional public scoping period was initiated on October 15, 2009 when BLM published the NOI notifying the public of possible land use plan amendment to the 1987 Jarbidge RMP for the project. A BLM news release was distributed to local and regional media on October 13, 2009 and a newsletter was distributed to Tribes, Federal, state and local agencies, interest groups, and members of the general public on December 23, 2009.

Internal scoping within the BLM has also occurred throughout the EIS process to help focus alternative development.

A scoping report was prepared that summarized the results of public and internal scoping and is available on the project website (http://www.blm.gov/id/st/en/prog/planning/china_mountain_wind.html) and upon request.

Concurrent with scoping, coordination with cooperating agencies occurred and consultation with tribal governments was initiated. Feedback from the agencies and Tribes were considered when identifying significant issues for analysis in the EIS. Further information on cooperating and participating agencies and government-to-government consultation is presented in Chapter 5.

1.6.1 SIGNIFICANT ISSUES IDENTIFIED

The Council on Environmental Quality Regulations (40 CFR 1502.1) require Federal agencies to focus their analysis and documentation on the significant issues related to a proposed action and its alternatives. Significant issues are those related to significant or potentially significant effects (BLM NEPA Handbook, Section 6.4; BLM, 2008b). The BLM has identified significant issues associated with the project. Issues include those raised externally during the scoping process by individuals, special interest groups, Tribes, and state, local, and Federal agencies, and those developed internally by the BLM. The following is a list of the significant issues identified during scoping that are addressed in this EIS.

Fish and Wildlife

Special Status Species

<u>Greater Sage-Grouse</u> – There were a number of issues raised regarding the greater sage-grouse (sage-grouse):

- The presence of tall structures (wind turbines, meteorological towers, and transmission lines) could lead to avoidance of sage-grouse habitat in the project area and could affect movement of grouse through the area.
- Noise and activity associated with construction, operation, and maintenance of the project could disturb sage-grouse lekking activities, nesting, brood-rearing, and other use of habitat in the vicinity of the project area.

Development on BLM-Administered Lands in the Western United States (BLM, 2005a). The policies and best management practices for wind energy ROW authorizations established in the Wind PEIS ROD would apply to the project (BLM, 2005b).

The major authorizing laws, regulations, and policies relevant to the project are briefly addressed below and would be complied with.

- As provided in FLPMA, BLM has the responsibility to plan for and manage public lands, defined as federally administered lands and interests in lands, such as mineral estate, administered by BLM.

- Federal agencies are required to consider the effects of proposed actions on cultural resources. The Proposed Action and alternatives must comply with the Archaeological Resources Protection Act of 1979 as amended (16 United States Code [USC] §§ 470aa–470mm, 1979) and the National Historic Preservation Act of 1966 as amended (16 USC 1A §§ 470 *et seq*., 2001).

- The BLM has a responsibility and obligation to consider and consult on potential effects to natural resources related to the Tribes' treaty rights or cultural use, and other laws are in place to address tribal rights and interests. The Proposed Action and alternatives must comply with the Native American Graves Protection and Repatriation Act of 1990 (25 USC §§ 32–3001, 1990), American Indian Religious Freedom Act of 1978 (42 USC 1966), Fort Bridger Treaty of 1868 (15 Stat. 673), and Executive Order 13007 (Sacred Sites). Government-to-Government consultation (Executive Order 13175) is on-going with the Duck Valley Shoshone-Paiute Tribes, the Shoshone-Bannock Tribes, and the Te-Moak Tribes of the Western Shoshone for this project (Chapter 5).

- The Special Status Species Management Manual for the BLM (BLM Manual 6840) establishes guidance for management of species listed or proposed for listing pursuant to the Endangered Species Act of 1973 as amended (16 USC 1531) and Bureau sensitive species (as designated by BLM State Directors) which are found on BLM-administered lands. Section 7(a)(2) of the Endangered Species Act states that each Federal agency shall, in consultation with the Secretary, insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of their critical habitats within the project area.

- The Migratory Bird Treaty Act of 1918, as amended, and Executive Order 13186 outline the responsibilities of Federal agencies to protect migratory birds. Federal agencies including BLM are to include considerations for conserving migratory birds and their habitat, restore and enhance their habitat, prevent detrimental alteration of the environment, and design migratory bird habitat and population principles, measures and practices into agency plans and planning processes.

- The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d) further protects eagles from "take", where take is defined as to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, disturb individuals, their nests and eggs. "Disturb" was defined in 2007 (72 FR 31132) as "to agitate or bother a bald or golden eagle to a degree that causes…injury to an eagle, reduced productivity, or nest abandonment…" In 2009, new 50 CFR 22.26 can authorize limited take of bald and golden eagles when the take is associated with, but not the purpose of an otherwise lawful activity, and cannot practicably be avoided.

- The Federal Noxious Weed Act of 1974, as amended was established to control and manage the spread of noxious weeds. Executive Order 13112, Invasive Species, was signed to prevent the introduction of and control the spread of invasive species and to minimize the economic, ecological, and human health impacts that invasive species cause.

- Secretarial Order No. 3310, December 23, 2010, established Wild Lands Management direction for the BLM. Within the project analysis area, there are two identified areas of lands with wilderness characteristics. Individual wilderness characteristics within these areas would be impacted under all alternatives with the exception of the "No Action Alternative." Impacts on the individual characteristics are described in Chapter 4. Effects on and effects of potential Wild Lands designations will be further analyzed between this draft and the final EIS.

In addition to public lands, the proposed wind energy facility and the associated transmission interconnect lines cross IDL and private land. These lands are zoned as agricultural range preservation in Idaho and are subject to the policies set forth in the County Code of Twin Falls County. The Applicants would need to apply for a conditional use permit through the Twin Falls County Planning and Zoning Administration, per Chapter 6 – Districts and Zones and Chapter 7 – Conditional Uses, of the Twin Falls County Zoning Ordinance (Ord. 21, 12-1-1998). The Applicants also would need to obtain a lease, temporary permit, and/or easement from IDL for project activities on Endowment lands. Additionally, legal access from private landowners would need to be obtained. Most land in the Nevada portion of the project area is public, with small parcels of private land to the south along the overhead transmission line. The private land is zoned as open space by Elko County. Permits would be required by Elko County, but it is unknown at this time what permits the county would issue.

Several other laws, regulations, and policies apply to the project. Table 1-1 identifies the various actions that would need to occur and the corresponding authority (law, regulation, or policy) requiring those actions. The Applicants would be responsible for obtaining these ROWs and permits (Table 1-1) and fulfilling all requirements of their authorization.

Table 1-1. Federal and State Authorities and Actions for the Proposed Project.

Agency	Action	Authority
BLM	Prepare Draft EIS, Final EIS, 1987 Jarbidge RMP Amendment, and Record of Decision.	NEPA, 40 CFR Parts 1500-1508 Federal Land Policy Management Act (FLPMA) of 1976 (as amended), Public Law 94-579
BLM	Process ROW Grant.	FLPMA of 1976 (as amended) Public Law 94-579; 43 CFR 2800
BLM	Issue Notice to Proceed.	BLM Manual H-2801-1 ROW Plan of Developments
BLM	Determine stipulations to prevent the establishment and spread of noxious weeds and invasive plants.	The Federal Noxious Weed Act of 1974, as amended; Executive Order 13112, Invasive Species
U.S. Environmental Protection Agency	Issue Permit for treatment, storage, or disposal of hazardous wastes.	Resource Conservation and Recovery Act
U.S. Environmental Protection Agency	Concur with Air Quality Conformance Statement.	Clean Air Act as amended 1990
U.S. Environmental Protection Agency	Issue National Pollutant Discharge Elimination System permit. Issue Construction Stormwater Permit.	Clean Water Act as amended 1977
U.S. Fish and Wildlife Service	Review impact on federally listed or proposed threatened and endangered species of fish, wildlife, plants, and migratory birds. Issue a concurrence letter or Biological Opinion based on the determination of a Biological Assessment of potential project impacts on threatened and endangered species.	Fish and Wildlife Coordination Act of 1934, as amended 1946, 1977 (16 USC 661-667e); Endangered Species Act of 1973 (16 USC Sections 1531 *et seq.*); Migratory Bird Treaty Act of 1918, as amended (16 USC 703 *et seq.*); Bald Eagle and Golden Eagle Protection Act (16 USC 668-668d)
U.S. Bureau of Alcohol, Tobacco and Firearms	Issue permit to use explosives for construction.	CFR Title 27, Alcohol, Tobacco and Firearms, Revised April 1, 2003
Federal Aviation Administration	Issue Determination of No Hazard to Air Navigation.	CFR Title 14 Aeronautics and Space Federal Aviation Regulations
U.S. Army Corp of Engineers	Issue a 404 Nationwide Permit.	Clean Water Act., as amended 1977; Executive Order 11990, Protection of Wetlands

Table 1-1. Federal and State Authorities and Actions for the Proposed Project (continued).

Agency	Action	Authority
Idaho Department of Fish and Game and Nevada Department of Wildlife	Review impacts to wildlife and wildlife habitat and assist in developing mitigation measures.	Fish and Wildlife Coordination Act of 1934, as amended 1946, 1958, 1977 (USC 661-667e)
Idaho Department of Lands	Issue a lease, temporary permit, and/or easement for project activities located on Endowment land.	State of Idaho Administrative Rule 20.03.08 Easements on State Owned Land
Idaho Department of Environmental Quality	Issue Permit to Construct for Concrete Batch Plant and Mobile Rock Crusher. Process Dust Prevention and Control Plan.	Clean Air Act, as amended 1990; Administrative Rule 5801200 and Permit by Rule requirements 5801795; Idaho Administrative Procedures Act (IDAPA) 58.01.01.797.02, Rules for the control of air pollution in Idaho
Nevada Division of Environmental Protection	Issue Surface Area Disturbance Permit. Process Fugitive Dust Management Plan.	Clean Air Act, as amended 1990; Nevada Revised Statutes 445B.100 through 445B.825, inclusive, and NRS 486A.010 through 486A.180, inclusive
Nevada Division of Environmental Protection	Construction Storm Water Permit. National Pollution Discharge Elimination Permit. Working in Waterways Permit. Water Quality Certificate 401 Permit.	40 CFR 122.26; NRS 445A.010-445A.730
Idaho and Nevada State Historic Preservation Offices	Review and provide comments on BLM's determination of site eligibility for listing on the National Register of Historic Places and it determination of project effects on eligible or listed properties.	National Historic Preservation Act of 1966, as amended (16 USC 470)
Advisory Council on Historic Preservation	Comments on proposed Federal undertakings. Provides consultation and is signatory for the Programmatic Agreement. Prepares final form for the Programmatic Agreement.	Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR Part 800)

Table 1-1. Federal and State Authorities and Actions for the Proposed Project (continued).

Agency	Action	Authority
Idaho Department of Water Resources	Approve Water Rights For Well.	Section 42-229, Idaho Code (water rights); Section 42-235, Idaho Code (drilling permits); Section 42-238, Idaho Code, IDAPA 37-03 Chapter 9 (well construction standards and rules)
Idaho Department of Water Resources	Issue Stream Channel Alteration Permit and Wetland Removal Fill Permit (permit would be needed if any roads or other project features would require the alteration of any stream channel or wetland).	Idaho Code, Title 42 Chapter 38
South Central Public Health District, Twin Falls, Idaho	Approve Operation and Maintenance Building Septic System.	IDAPA 58 Title 01 Chapter 3 Rules for Individual Subsurface Sewage Disposal
Twin Falls County	Issue Conditional Use Permit and Building Permits.	Twin Falls County Zoning Ordinance (Ord. 21, 12-1-1998)
Elko County	To Be Determined.	Elko County Department of Planning and Zoning
Idaho Transportation Department	Issue Oversize Load Permits. Issue Over Dimensional permits.	IDAPA 39 Title 03 Chapter 13
Nevada Department of Transportation	Issue Oversize Load Permits. Issue Over Dimensional Permits.	Nevada Revised Statute 484: Traffic Laws; Nevada Administrative Code 484: Traffic Laws

CHAPTER 2 – ALTERNATIVES INCLUDING THE PROPOSED ACTION

Chapter 2

2.1 INTRODUCTION

This chapter describes the alternatives associated with the proposed China Mountain Wind Project (the project), including the Proposed Action and the No Action Alternative. This chapter includes: information on how alternatives were developed; describes components common to all action alternatives; describes the alternatives that are evaluated in detail and their prosed land use plan amendments; describes alternatives that were considered but eliminated from detailed study; and compares the key features and effects of the alternatives analyzed in detail.

The Environmental Impact Statement (EIS) considers a range of reasonable alternatives. Reasonable alternatives include those that are technically and economically practical, are feasible, and use common sense. They are not simply more desirable from the standpoint of the Applicants (Council of Environmental Quality 4646 FR 18026 [March 23, 1981] as amended).

The alternative development process considered alternatives to meet the purpose and need for the action. Through the interagency and public scoping meetings, action alternatives were developed. These alternatives were developed in accordance with Council of Environmental Quality regulations to provide decision-makers and the public with a clear basis for choice (40 CFR 1502.14).

The Bureau of Land Management (BLM) complied with the National Environmental Policy Act (NEPA) of 1969 requirements in developing alternatives for this Draft EIS, including seeking public input. Alternative formulation took into consideration the existing decisions in the 1987 Jarbidge Resource Management Plan (RMP) and its amendments (1987 Jarbidge RMP) and the 1985 Wells RMP and its amendments (1985 Wells RMP), including the policies and design features adopted by the 2005 Record of Decision (Bureau of Land Management [BLM], 2005a) for the *Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States* (Wind PEIS) (BLM, 2005b).

Alternative development considered public input during the scoping process and information obtained during agency coordination. A description of the public and agency involvement for the project is contained in Chapter 5 of this EIS. The scoping process and its results, and other opportunities for public involvement, are summarized in Section 1.6 of Chapter 1 and Section 5.3 of Chapter 5 of this EIS.

The BLM Interdisciplinary Team met to develop alternatives to the Proposed Action. The BLM used the following criteria to evaluate alternatives for further consideration:

- Did the alternative meet the purpose and need for the project?
- Was the alternative technically and economically feasible?
- Did the alternative address and consider identified issues?
- Did the alternative cause more, less, or the same level of environmental effects than the Proposed Action for at least some resources?

2.1 INTRODUCTION

This chapter describes the alternatives associated with the proposed China Mountain Wind Project (the project), including the Proposed Action and the No Action Alternative. This chapter includes: information on how alternatives were developed; describes components common to all action alternatives; describes the alternatives that are evaluated in detail and their prosed land use plan amendments; describes alternatives that were considered but eliminated from detailed study; and compares the key features and effects of the alternatives analyzed in detail.

The Environmental Impact Statement (EIS) considers a range of reasonable alternatives. Reasonable alternatives include those that are technically and economically practical, are feasible, and use common sense. They are not simply more desirable from the standpoint of the Applicants (Council of Environmental Quality 4646 FR 18026 [March 23, 1981] as amended).

The alternative development process considered alternatives to meet the purpose and need for the action. Through the interagency and public scoping meetings, action alternatives were developed. These alternatives were developed in accordance with Council of Environmental Quality regulations to provide decision-makers and the public with a clear basis for choice (40 CFR 1502.14).

The Bureau of Land Management (BLM) complied with the National Environmental Policy Act (NEPA) of 1969 requirements in developing alternatives for this Draft EIS, including seeking public input. Alternative formulation took into consideration the existing decisions in the 1987 Jarbidge Resource Management Plan (RMP) and its amendments (1987 Jarbidge RMP) and the 1985 Wells RMP and its amendments (1985 Wells RMP), including the policies and design features adopted by the 2005 Record of Decision (Bureau of Land Management [BLM], 2005a) for the *Final Programmatic Environmental Impact Statement on Wind Energy Development on BLM-Administered Lands in the Western United States* (Wind PEIS) (BLM, 2005b).

Alternative development considered public input during the scoping process and information obtained during agency coordination. A description of the public and agency involvement for the project is contained in Chapter 5 of this EIS. The scoping process and its results, and other opportunities for public involvement, are summarized in Section 1.6 of Chapter 1 and Section 5.3 of Chapter 5 of this EIS.

The BLM Interdisciplinary Team met to develop alternatives to the Proposed Action. The BLM used the following criteria to evaluate alternatives for further consideration:

- Did the alternative meet the purpose and need for the project?
- Was the alternative technically and economically feasible?
- Did the alternative address and consider identified issues?
- Did the alternative cause more, less, or the same level of environmental effects than the Proposed Action for at least some resources?

In addition to the Interdisciplinary Team, a group of wildlife specialists was formed to provide input on the development of alternatives specific to wildlife. This group, known as the Wildlife Working Group, was made up of professional biologists from the BLM and their contractor, Idaho Department of Fish and Game, Nevada Department of Wildlife, and the United States Fish and Wildlife Service. All governmental agencies involved sponsored the group with BLM providing administrative support. The main roles of the Wildlife Working Group were to review and discuss scientific information relevant to the project and provide input on alternatives relative to wildlife resources.

In addition to the alternatives analyzed in detail, the BLM Interdisciplinary Team identified 11 alternatives that were eliminated from detailed study. BLM determined that these 11 alternatives were either outside the scope of this EIS or did not meet the purpose and need. Some components of these alternatives were incorporated into at least one of the eight action alternatives that were analyzed in detail. As a result, these 11 alternatives are not analyzed as stand-alone alternatives. These 11 alternatives are described in more detail in the Section 2.13, Alternatives Considered but Eliminated from Detailed Study.

2.2 ALTERNATIVE A (NO ACTION)

As required by the National Environmental Policy Act of 1969 under Section 1502.14(d), this EIS includes Alternative A, the No Action Alternative. The No Action alternative is used as the baseline against which the action alternatives can be compared. Under the No Action Alternative, BLM would deny the application to construct and operate a wind energy facility. No right-of-way (ROW) grant would be issued. Alternative A is consistent with decisions from the 1987 Jarbidge RMP and 1985 Wells RMP and would not require amendments to these plans.

2.3 OVERVIEW OF ACTION ALTERNATIVES ANALYZED IN DETAIL

The project area includes the ROW preference area and a 250-foot buffer around ROW areas outside of the ROW preference area (i.e., transmission interconnect line, interconnect substation, Monument Springs Road, and the Operation and Maintenance facility located at Three Creeks Road) (Figure 2.3-1). The project disturbance area consists of all areas where the surface would be disturbed on either a short-term, long-term, or permanent basis as a result of the project. This would include disturbances around the following project features: roads, turbine pads, laydown areas, the batch plant, underground collection system, substations, meteorological towers, operation and maintenance (O&M) facilities, transmission line poles, and the quarry site.

The Proposed Action, seven alternatives to the Proposed Action, and the No Action Alternative are analyzed in detail in this EIS. Three proposed inbound haul routes and one outbound haul route are also analyzed. An overview of the key differences between the alternatives is displayed in Table 2.3-1. A description of the project features common to all action alternatives is displayed in Table 2.3-2. A comparison of the project features that vary between action alternatives is displayed in Table 2.3-3. The total project disturbance and land status by action alternative is displayed in Table 2.3-4. A summary of disturbance required for construction and reconstruction of the haul routes is displayed in Table 2.3-5. Further detail about the project features common to all action alternatives is described in

Section 2.4. Further detail about disturbance associated with project features that vary by action alternative are described in Sections 2.5 through 2.12.

As discussed in Chapter 1, the project as proposed is not in conformance with the 1987 Jarbidge RMP. Therefore, amendments to the 1987 Jarbidge RMP would be required for the Proposed Action and some of the action alternatives (Table 2.3-1). The 1985 Wells RMP would not need to be amended.

Table 2.3-1. Overview of the Alternatives Analyzed in Detail.

Alt.	Key Differences	1987 Jarbidge RMP Amendments[1]
A	No Action Alternative	None
B1	Proposed Action 170 wind turbines 83 miles of project roads	-- Amend Visual Resource Management (VRM) Classes II and III to Class IV -- Seasonal restrictions and spatial buffers for wildlife would not apply during construction, operation, and decommissioning -- Allow a one-time exception for construction and siting of project features within 500 feet of streams
B2a	Project would be constructed in two phases. 100 wind turbines in Phase I, primarily on the eastern ridgelines of the preference ROW; 70 in Phase II further to the west. 63 miles of project roads in Phase I; 20 miles in Phase II.	Same as Alternative B1
B2b	Same phased approach as Alternative B2a but different arrangement of turbines in each phase. 100 wind turbines in Phase I in the north and western portion of the preference ROW; 70 in Phase II in the southern portion. 62 miles of project roads in Phase I; 21 miles in Phase II.	-- Amend VRM Classes II and III to Class IV -- Exceptions to seasonal restrictions and spatial buffers for wildlife would be granted during construction and decommissioning -- Allow a one-time exception for construction and siting of project features within 500 feet of streams
B2c	Same phased approach as Alternative B2b but different arrangement of turbines in each phase. 100 wind turbines in Phase I in the south and western portion of the preference ROW; 70 in Phase II in the northern portion. 70 miles of project roads in Phase I; 13 miles in Phase II.	Same as Alternative B2b
C	152 wind turbines 80 miles of project roads Eliminates 18 turbines of the Proposed Action layout from the north side of the project to avoid some sage-grouse leks and a known high use bat area.	Same as Alternative B2b

Table 2.3-1. Overview of the Alternatives Analyzed in Detail (continued).

Alt.	Key Differences	1987 Jarbidge RMP Amendments[1]
D	124 wind turbines 72 miles of project roads Eliminates the same 18 turbines as Alternative C and an additional 28 turbines from the southern portion of the project area to avoid portions of known sage-grouse movement areas.	Same as Alternative B2b
E	120 wind turbines 76 miles of project roads Eliminates 50 turbines from the Proposed Action layout in VRM Class II areas on the eastern ridgelines of China Mountain and avoids some special status species and habitat.	No RMP amendments
F	105 wind turbines 66 miles of project roads Eliminates 65 turbines from the Proposed Action related to cultural resource concerns and tribal importance.	Same as Alternative B2b

[1] All alternatives would comply with the 1985 Wells RMP; thus, no amendments to the 1985 Wells RMP are required.

Table 2.3-2. Project Features Common to All Action Alternatives.

Project Features	Amount	Total Disturbance (acres)
Turbine Capacity	2.0 megawatt (MW)	- -
Transmission Interconnect Line	19 miles	Included in acreage for transmission line roads
Transmission Line Roads	19 miles	25
Project Substations	2 (1 on private land, 1 on Idaho Department of Lands [IDL])	6
Interconnect Substation	1 (public land)	3
Meteorological Towers	3 (location not yet determined)	3
Operation and Maintenance Facility	2 (1 on public land, 1 on IDL land)	4
Underground Distribution Line	1 mile	<1
Site Compound	1 (public land)	3
Concrete Batch Plant	1 (private land)	3
Rock Crusher	1 (private land)	4
Quarry	1 (private land)	8

Table 2.3-3. Comparison of Project Features[1] that Vary Between Action Alternatives.

Feature	Alt B1	Alt B2a		Alt B2b		Alt B2c		Alt C	Alt D	Alt E	Alt F
		Phase I	Phase II	Phase I	Phase II	Phase I	Phase II				
Project Capacity	340	200	140	200	140	200	140	304	248	240	210
# of Turbines	170	100	70	100	70	100	70	152	124	120	105
Miles of Constructed Roads	62	49	13	41	21	50	12	59	51	55	46
Miles of Reconstructed Roads	21	14	7	21	0	20	1	20	20	21	20
Total Miles of Roads	83	63	20	62	21	70	13	80	72	76	66
Miles of Trenching	51	35	15	29	21	30	21	44	36	42	26
# of Laydown Yards[2]	4	4	2	4	2	3	1	4	3	4	3

[1] Acres of disturbance for project features that vary between action alternatives are described in Sections 2.5 through 2.12.
[2] For the phased alternatives (B2a, B2b, B2c), laydown yards constructed in Phase I would be revegetated during Phase II construction, two of the same laydown yards used in Phase I would be redisturbed.

Table 2.3-4. Project Disturbance and Land Status for all Project Features by Alternative.

Feature	Alt B1	Alt B2a		Alt B2b		Alt B2c		Alt C	Alt D	Alt E	Alt F
		Phase I	Phase II	Phase I	Phase II	Phase I	Phase II				
Acres of Short-term Disturbance[1]	585	370	232	367	235	386	209	531	443	461	375
Acres of Long-term Disturbance[1]	202	149	60	131	78	153	57	189	163	170	144
Acres of Permanent Disturbance[1]	25	17	9	25	0	25	1	25	25	25	25
Total Acres of Disturbance	812	536	301	523	313	564	267	745	631	656	544
		837[2]		836[2]		831[2]					
% Public Land[3]	66	78	38	64	67	59	76	63	57	58	52
% IDL[3]	10	7	16	15	1	9	12	11	12	12	14
% Private[3]	24	15	46	21	32	32	12	26	31	30	34

[1] Disturbance acres are presented as short-term, long-term, and permanent. Note that duration of impact could vary by resource, as described in Chapter 4.
[2] Total acreage for Phase I and Phase II combined. Total acres of disturbance under the phased alternatives includes temporary construction areas that would be disturbed during both Phase I and Phase II; therefore, total disturbance acres are greater than for Alternative B1.
[3] For phased alternatives, percentages are calculated independently for each phase.

Table 2.3-5. Summary of Haul Routes.

Haul Routes	Constructed Roads		Reconstructed Roads		Total Miles of Haul Route	Short-term Disturbance[1] (Staging Area)	Permanent Disturbance[2]	Total Acres of Disturbance[3]
	Miles	Acres	Miles	Acres				
Northern Inbound Haul Route	0	0	10	39	119	0	39	39
Southern Inbound Haul Route – Option 1	5	51	6	12	11	23	63	86
Southern Inbound Haul Route – Option 2	7	55	6	12	13	23	67	90
Outbound Haul Route	0	0	0	0	60	0	0	0

1 Short-term Disturbance = acres disturbed during construction that are revegetated shortly thereafter.
2 Permanent Disturbance = acres disturbed during construction that are not reclaimed or decommissioned.
3 Total Disturbance = Short-term + Permanent.

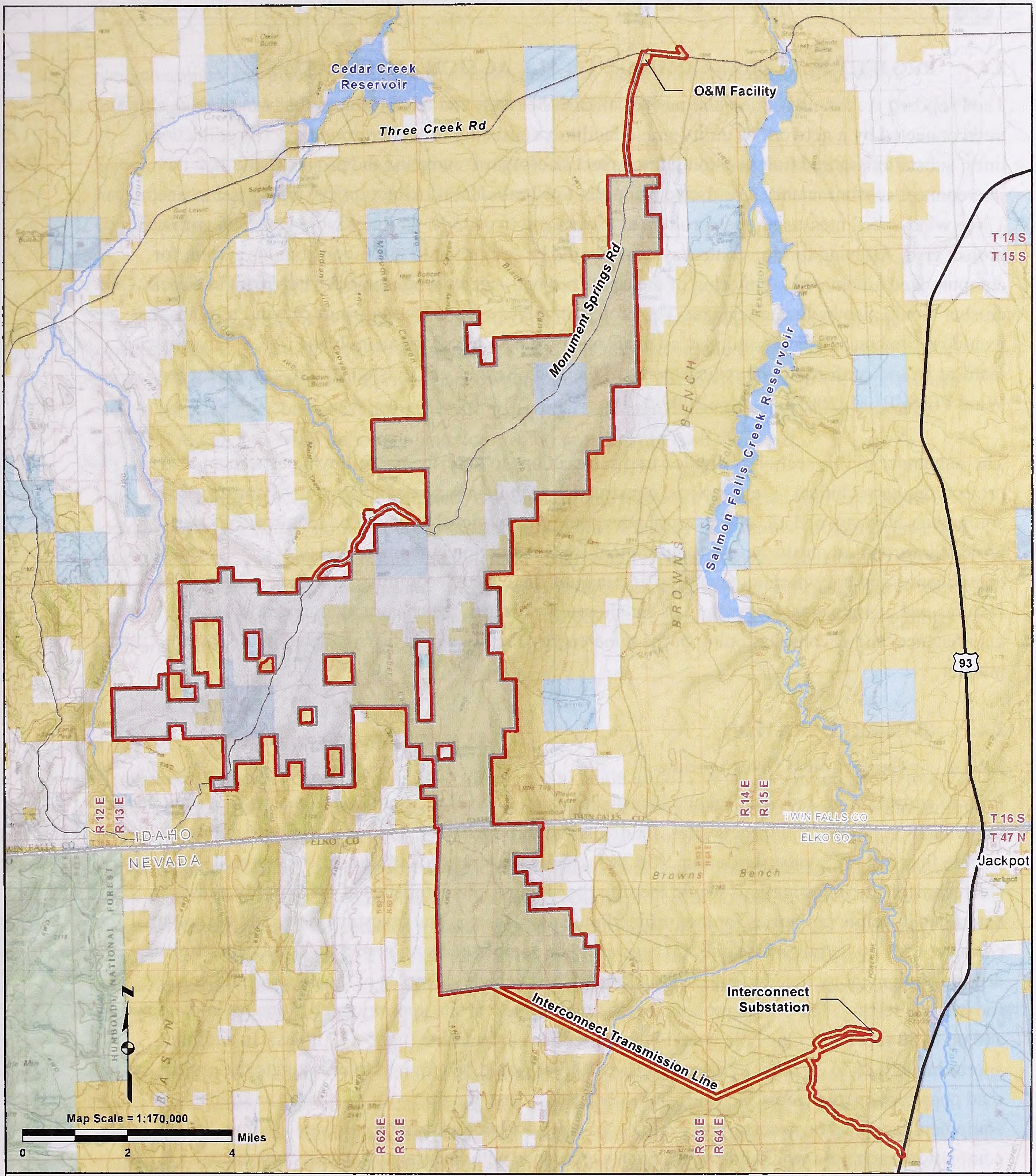


Figure 2.3-1. Project Area

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2.4 PROJECT FEATURES COMMON TO ALL ACTION ALTERNATIVES

The Proposed Action and action alternatives all include roads and wind turbines that would be interconnected by a network of utility-grade facilities consisting of: underground electric collection lines; substation(s); and transmission interconnect line(s) for connecting the project to the interconnect substation and the existing Midpoint to Humboldt 345 kilovolt (kV) transmission line. Three wind-speed measuring meteorological towers and two O&M facilities would be sited within the project area. All wind turbine control systems would be connected to a communications system for computerized automated monitoring of the entire project. A temporary cement batch plant and rock crusher would also be located on site. The project involves several linear strings of wind turbines that would be sited on ridgelines and plateau areas on and near China Mountain, Idaho. All of the project features would conform to the requirements of the 2005 Record of Decision (BLM, 2005b) for the Wind PEIS (BLM, 2005a) and IM 2009-049.

The remainder of this section is divided into sub-sections to describe the following aspects of the project: the geotechnical investigations, construction techniques, type, and amount of construction equipment, blasting, and all other general construction activities that would be required for the project; information on site access (haul routes) for construction equipment and delivery of turbine components; and construction, operation and maintenance, and decommissioning of the key project features and components. Regardless of the alternative chosen, the construction, operation, maintenance, and decommissioning of the wind energy facility would be conducted in the same manner.

2.4.1 SITE PREPARATION

2.4.1.1 Geotechnical Investigations

Prior to construction, geotechnical site investigations are needed to establish engineering data suitable for evaluation of potential turbine sites, finalizing the turbine layout, and for use in designating turbine foundations, roads, substations, O&M facilities, and transmission tower structures. Geotechnical site investigations would identify the strength characteristics of the bedrock and determine dynamic properties for the turbine foundation design. The investigation would consist of coring at each potential turbine site. Coring would be completed using moderate-sized geotechnical drilling equipment mounted to either a truck or tracked vehicle. Samples of the cores would be used for strength testing. The coring process leaves holes at the test site approximately 3 inches in diameter and up to 50 feet deep. One hole would be required for each turbine (up to 170 holes). In addition, approximately 25 to 30 holes at a depth of 5 to 10 feet would be required to investigate the project for road construction, the O&M facilities, and substations. Test pits dug with a backhoe or similar equipment may also be necessary to evaluate whether the bedrock can be excavated. Upon completion, each hole would be backfilled in accordance with Federal and state requirements.

Geotechnical investigations may include seismic refraction survey lines. The seismic refraction lines would be used to determine dynamic soil properties of the underlying bedrock and to confirm bedrock strength. The seismic refraction lines would be completed using extremely low energy sources, a

sledgehammer, and plate. The seismic analysis would also include multichannel surface-wave analysis, which uses background vibrations such as vehicles to generate seismic noise.

Equipment that would be used to complete the geotechnical investigations includes drill rigs, backhoes or excavators, pickup trucks with thermal and electrical equipment for measuring soil conductivity, and water trucks.

2.4.1.2 Facility Micro-Siting and Survey

The Applicants' preliminary facility siting is flexible to adjust for site-specific conditions and constraints. Certain adjustments to infrastructure locations may be needed to address environmental and engineering constraints and private landowner participation. For analysis purposes, approximate locations of facilities have been identified. If necessary, final adjustments to the exact location of facility structures to avoid important resources would be approved with the BLM.

Surveying would be completed to delineate the wind turbine array ROW boundaries, wind turbine tower locations, turbine pad boundaries, substation and O&M facility boundaries, projects roads, and underground collection system centerlines. Transmission line surveying would delineate the ROW centerline and boundaries, transmission line tower structure locations, and project road centerlines. Environmentally sensitive areas would be field delineated, where appropriate, to assist in avoiding such areas during project construction.

2.4.2 CONSTRUCTION

2.4.2.1 Construction Schedule

If approved, construction of the project is anticipated to begin in 2012, with generation and delivery of electricity to the grid by 2014. Once completed, the project is planned to operate year-round for up to 30 years. The exact schedule of construction would depend upon the date of the authorization of the ROW grants and notices to proceed, weather conditions, and delivery schedules for the turbines, steel, cement, and electrical components. Construction of the project under the Proposed Action and Alternatives C, D, and F is predicted to take 2 years. Construction of the project under the phased alternatives is expected to take 3 years; Phase I would take 2 years and Phase II would take 1 additional year. Construction under Alternative E is predicted to take about 4 years because of the shortened construction window.

The first work to be completed would be the geotechnical investigations. The results of the geotechnical work would be used to complete the final project design. Following completion of final design, the haul routes would be constructed, followed by the project roads. As roads are being completed, excavation and construction of the turbine foundations would begin. As soon as turbine foundations near completion, turbine towers and other components would be delivered to each turbine site and lifted into place by the turbine crane. Once the road system is finished, the underground collection system trenching and placement of the cabling would be completed, as well as construction of the substations and transmission interconnect line. Next, the O&M facilities would be completed with the associated power supplies and septic systems. The wind project would then be energized and

tested. The last task to be completed would be final construction clean-up, final grading, and revegetation of areas disturbed during construction.

2.4.2.2 Construction Work Force

During the construction period, direct monthly employment is anticipated to peak at a maximum of 225 on-site jobs. Various stages of construction would occur at different locations throughout the construction process, and in some cases, project construction could be carried out concurrently at a number of locations. The Applicants would use local and/or non-local contractors and subcontractors according to the equipment and personnel needs of the project.

2.4.2.3 General Construction Equipment

Construction equipment would consist of earth-moving equipment, including but not limited to loaders, various-sized bulldozers, graders, shovels and backhoes, assembly cranes, delivery trucks and light-duty support vehicles. Table 2.4-1 provides a list of the typical numbers and types of equipment anticipated to be used for construction of the project.

Table 2.4-1. Estimated Vehicles and Equipment for Construction of the China Mountain Wind Project.

Equipment Type	# of Units
Pick-up trucks	40
Equipment Maintenance and Refueling Trucks	3
Fork Lifts	9
Mobile Rubber Tired Cranes	5
Turbine Lift Cranes	2-3
Bulldozers	8
Excavators	8
Blades	6
Rollers/Compactors	6
Graders	1
Water Trucks	8-10
Front End Loaders	4
Dump Trucks	6
Belly Dumps	30
Digger Trucks	2
Bucket Trucks	2
Dozers	1
Tensioning Trucks	2
Cement Trucks	12
Cement Powder Delivery Trucks	3
Cable Trenchers	2
Reel Carts and Assist Tractors	2

2.4.2.4 Haul Routes

Large trucks delivering turbine components to a site require specific road slope, pitch, turn radius, and widths. Existing roads in the project area do not meet these requirements. As a result, the existing roads would need to be reconstructed and/or new roads would need to be built to accommodate access for the large turbine component delivery trucks. Three inbound haul route options and one outbound route are being analyzed for the project. However, only one inbound haul route would be authorized. The haul routes would only be used during construction activities, to haul turbine components and other construction equipment, and during major maintenance activities where turbine components and cranes would be needed.

Northern Inbound Haul Route

A northern inbound haul route would access the project by a series of existing gravel and paved roads off of Idaho State Route 51 approximately 19 miles south of the city of Mountain Home, Idaho (Figure 2.4-1). This route would be 119 miles in length with 23 miles on pavement and 96 miles on gravel-surfaced road. The northern inbound haul route would require roadway reconstruction including but not limited to grading, softening corners, installing pullouts, and placing gravel roadbed material in selected areas. The existing road approach to the bridge over Clover Creek would need modifications to horizontal and vertical grade alignments. Between the towns of Bruneau and Hot Springs, Idaho, a distance of approximately 10 miles of road would need to have 6-foot shoulders constructed for safety purposes. To allow local traffic to pass the turbine component delivery trucks, pullouts would need to be constructed approximately every 5 miles between Bruneau and Three Creek Road. These turnouts would be 12 feet wide and 400 feet long. In addition, some portions of the roadway would need to be widened to allow passage of the “wide load” turbine component trucks. The existing corner of the Clover Three Creek Road and Three Creek Road would need to have a 150-foot radius turn constructed to allow the long delivery trucks to make the turn. Reconstruction would result in approximately 39 acres of ground disturbance. The exact locations of the reconstruction and type and extent of the work would be determined during final design of the project.

Southern Inbound Haul Route Option 1

Option 1 of the southern inbound haul route would access the project by a series of existing roads and newly constructed gravel roads off of United States Highway Route 93 (US-93) approximately 5 miles south of the town of Jackpot, Nevada. This haul route would be 11 miles in length and require upgrade of the existing roadbed material, reconstruction of 6 miles of road, and construction of 5 miles of new road alignment (Figures 2.4-1 and 2.4-2; Table 2.3-5). Construction would require areas of cut and fill that would result in the short-term disturbance of up to 23 acres and a permanent disturbance of 63 acres. The 23-acre staging area would reclaimed following construction. The driving surface of the road would be 24 feet wide and would consist of 12 inches of 0.75-inch gravel over compacted native soils. The road would be engineered and constructed per BLM Manual 9113 and BLM Gold Book (2007). However, a 0.75-mile section of road with up to 20 percent gradient would be required and is not consistent with BLM manual direction.

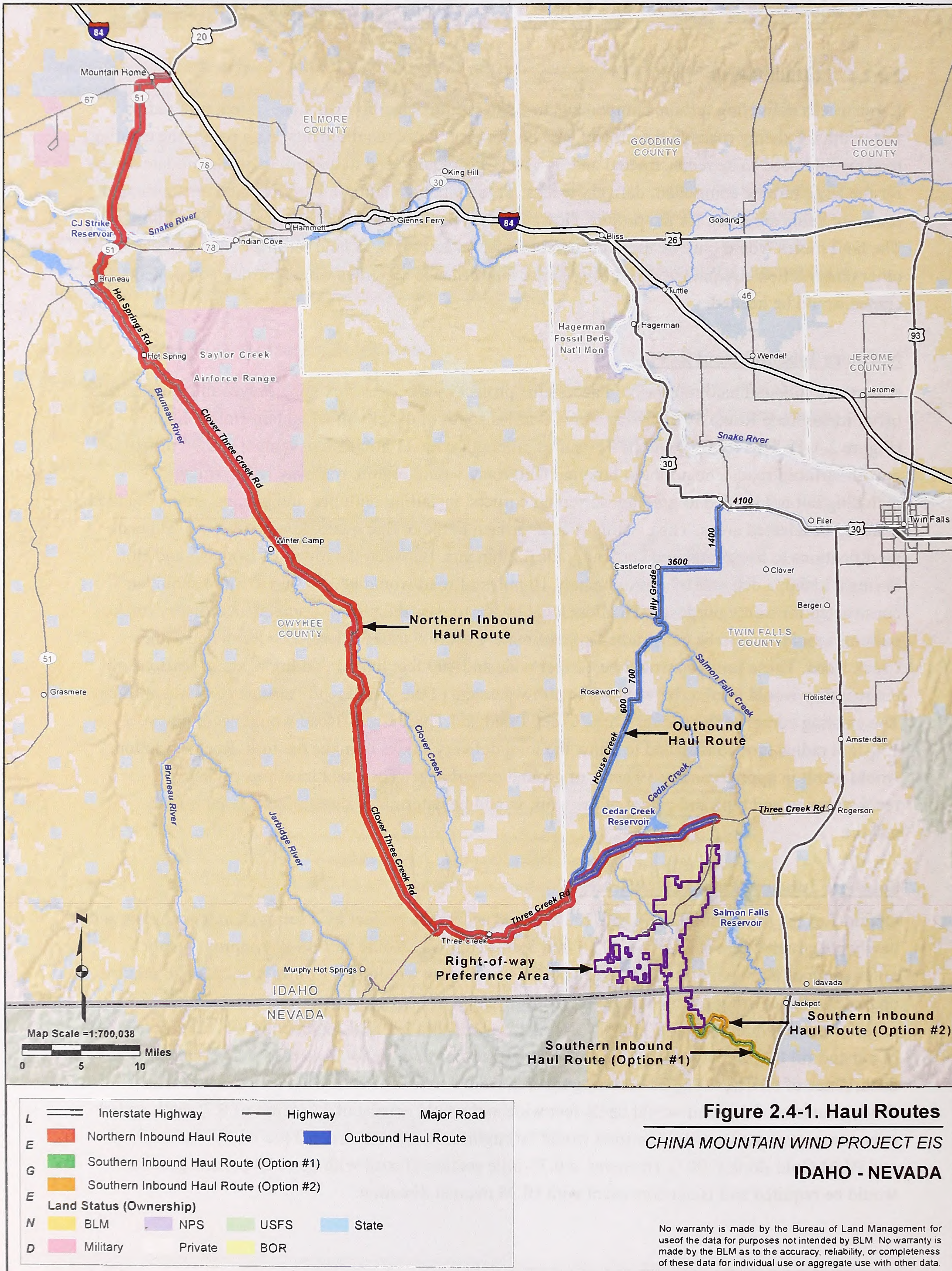

Figure 2.4-1. Haul Routes

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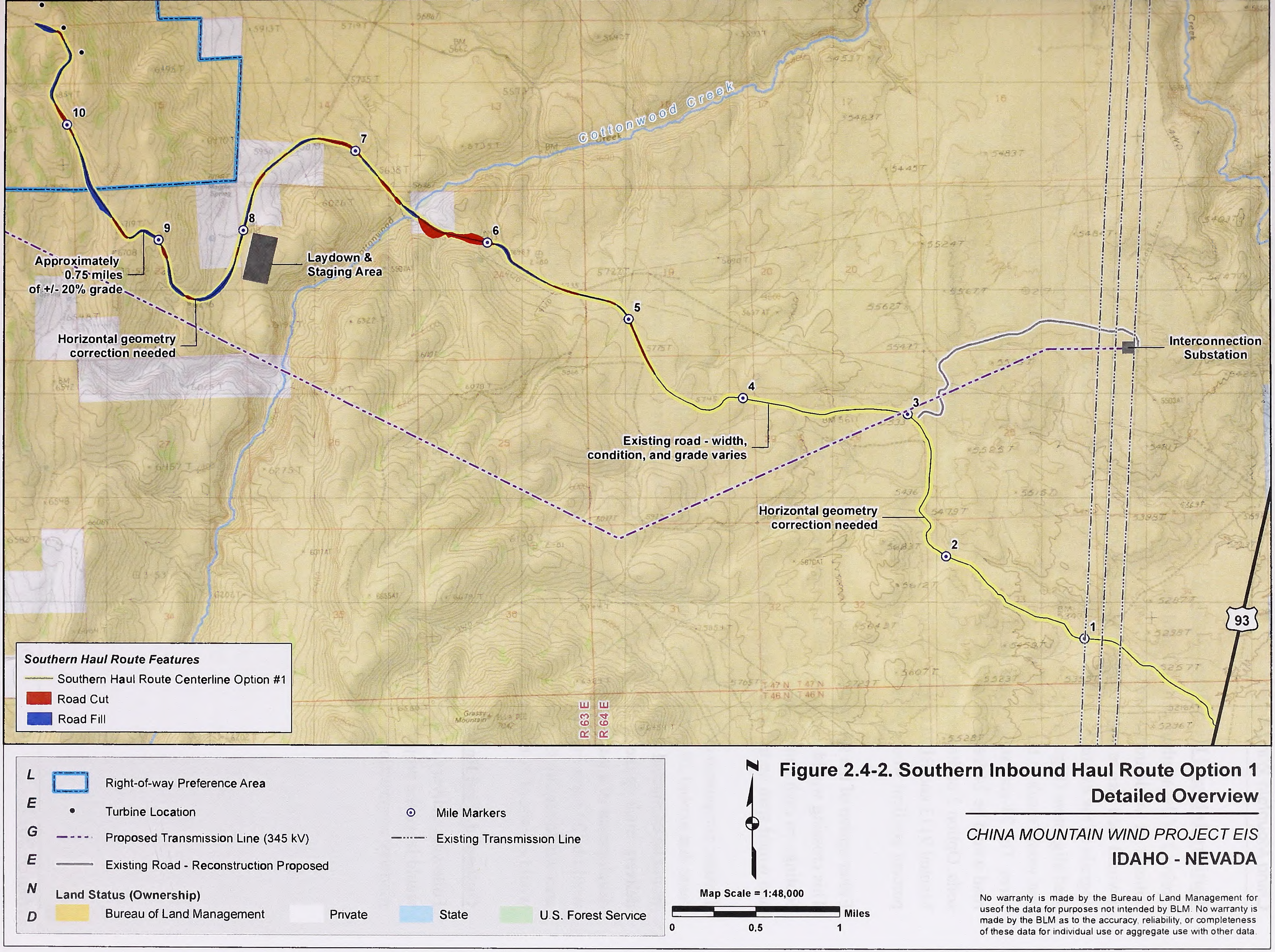

Figure 2.4-2. Southern Inbound Haul Route Option 1 Detailed Overview

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Southern Inbound Haul Route Option 2

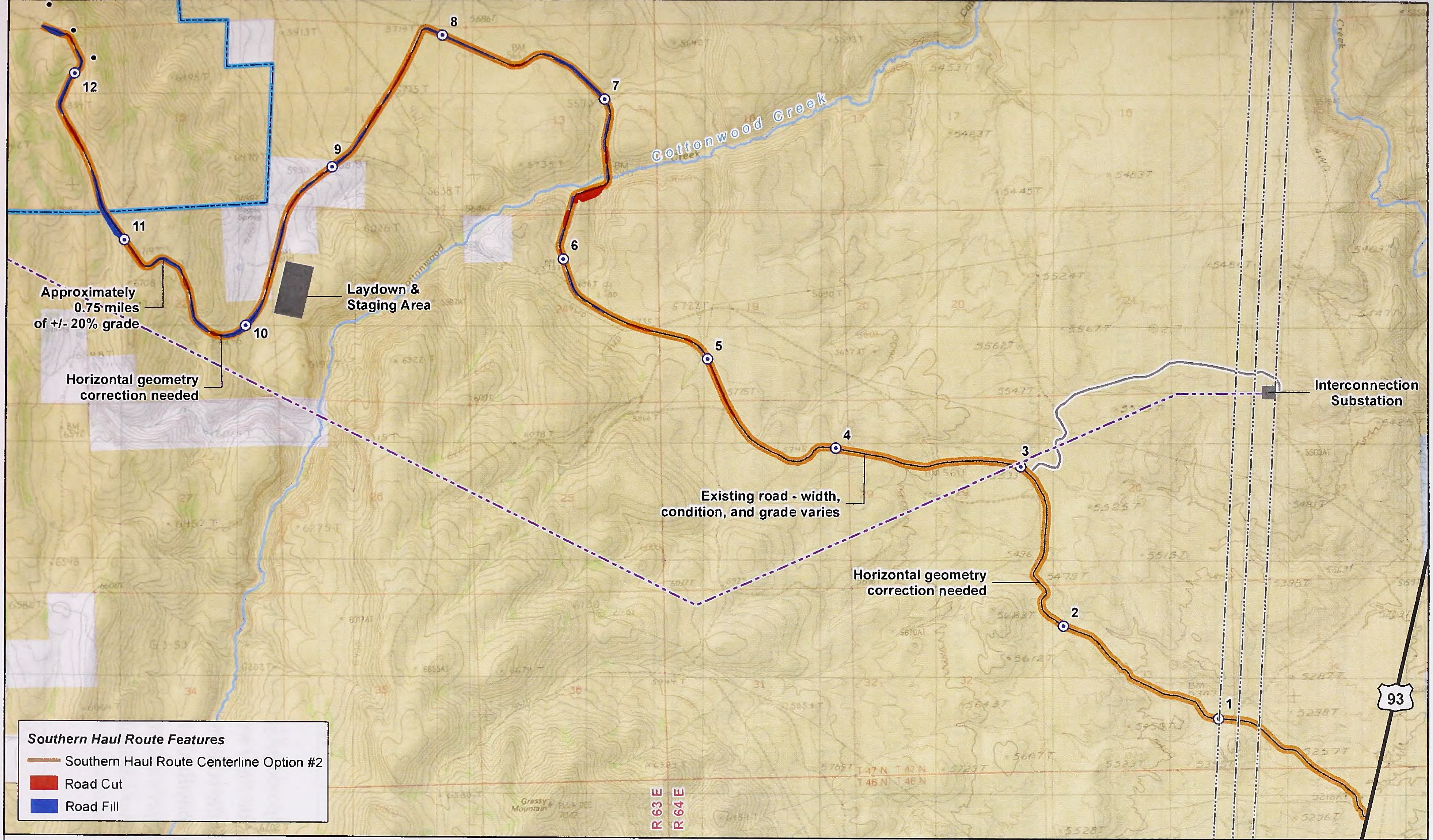
Option 2 of the southern inbound haul route would originate at the same location off of US-93 as option 1. It would initially follow the same route as option 1 until reaching Cottonwood Creek, where it would then turn in a northerly direction. Option 2 would be 13 miles in length. It would require upgrade of the existing roadbed material, reconstruction of 6 miles and construction of 7 miles of new road alignment (Figures 2.4-1 and 2.4-3; Table 2.3-5). Construction would require areas of cut and fill that would result in the short-term disturbance of up to 23 acres and a permanent disturbance of 67 acres. The 23-acre staging area would be reclaimed following construction. The driving surface of the road would be 24 feet wide and would consist of 12 inches of ¾-inch gravel over compacted native soils. Option 2 of the southern inbound haul road would be engineered and constructed per BLM Manual 9113 and BLM Gold Book (2007). However, a 0.75-mile section of road with up to 20 percent gradient would be required that is not consistent with BLM manual direction.

Either option of the southern inbound haul route would require a new crossing of Cottonwood Creek. This crossing would use an arch plate/bottomless culvert design with wing walls to protect the footings on each bank of the creek (Figure 2.4-4). The culvert would be approximately 24 feet across and would span up to 70 linear feet of Cottonwood Creek.

Turbine component delivery truck access to the portions of either option of the southern inbound haul route that exceed 20 percent grade would require the use of "helper trucks." The "helper" trucks would be connected to the front of the turbine component delivery trucks and would literally tow the delivery truck up the 20 percent grade section of the road. The helper trucks would require the development of a staging area at the base of the 20 percent grade section of road. The staging area would be 23 acres in size, measuring 750 feet wide and 1,350 feet long. Development of the staging area would require the clearing of vegetation and grading of the site. The surface of the staging area would consist of ¾-inch gravel over compacted native sub-base material.

Outbound Haul Route

Following delivery of components, equipment, and materials, all turbine component delivery trucks would leave the project area from the north by a 60-mile outbound haul route (Figure 2.4-1). No roadway construction or reconstruction would be needed to the existing outbound haul route.



LEGEND

Right-of-way Preference Area

Turbine Location

Mile Markers

Proposed Transmission Line (345 kV)

Existing Transmission Line

Existing Road - Reconstruction Proposed

Land Status (Ownership)

Bureau of Land Management | Private | State | U.S. Forest Service

Map Scale = 1:48,000

0 | 0.5 | 1 Miles

Figure 2.4-3. Southern Inbound Haul Route Option 2 Detailed Overview

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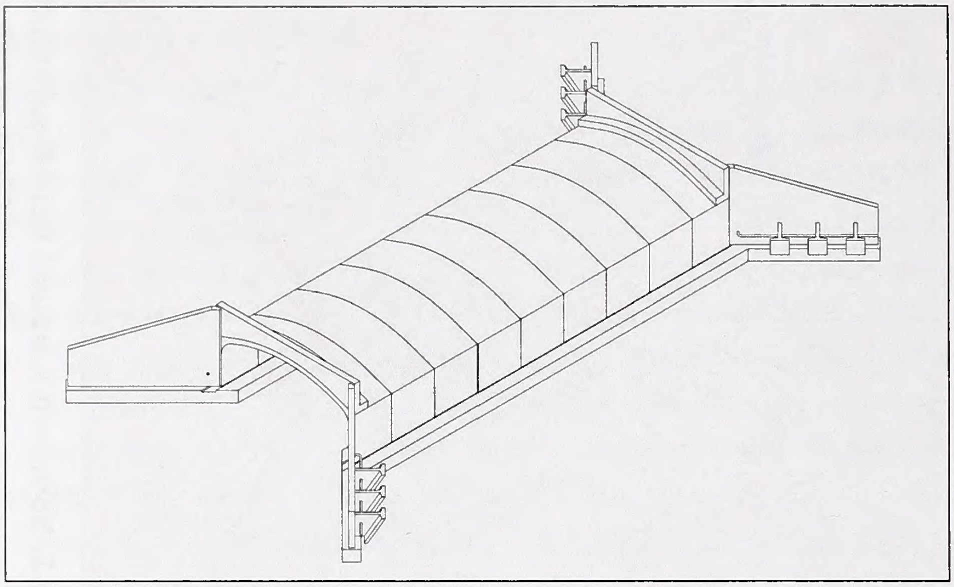

Figure 2.4-4. Diagram of Typical Arch Plate Culvert.

2.4.2.5 Transportation and Access

Transporting turbine components to the project area would require a large number of trucks of varying sizes. Up to 1,654 truckloads of turbine components and parts would need to access the site. Table 2.4-2 provides a summary of the turbine components to be delivered, the number of truck trips that would be required to access the site using any of the proposed inbound haul routes, and the size of truck (based on number of axles) that would be used.

Table 2.4-2. Summary of Turbine Component Delivery Vehicles.

Turbine Component	Estimated Number of Truck Trips	Number and Position of Axles on Each Truck (O = Axle)
Nacelle	170	O---OOO------OOO------------------OOO---OOO
Hub	170	O---OO-----------------------OO
Blades	510	O---OO--OO
Tower Base	170	O---OOO------OOO---------------OO---OO
Tower Lower Mid	170	O---OOO------------------OOO
Tower Upper Mid	170	O---OOO------OO-----------------OO---OO
Tower Top	170	O---OOO-----------------------------OOO
Parts Containers	68	O---OO-----------------------OO
Parts Loads	56	O---OO-----------------------OO
TOTAL	**1,654**	

Construction of the proposed projects roads, facilities, transmission interconnect lines, and electrical/communication lines would generally occur simultaneously using individual vehicles for multiple tasks. During the construction period, approximately 300 daily round trips would occur by vehicles transporting construction personnel and small equipment to the site. Over the entire construction period, approximately 15,130 trips by dump trucks, concrete trucks, water trucks, cranes, delivery trucks, and other construction and trade vehicles would occur (Table 2.4-3).

Table 2.4-3. Estimated Maximum Vehicle Trips for Construction of the Project.

Purpose for Truck Trip	Number of Truck Trips
Deliver turbine components (170 turbines)	1,654
Water delivery, road, turbine foundation, transmission line, and underground collection system construction	13,330
Crane delivery and removal	56
Deliver substations and other electrical components	50
Deliver operation and maintenance building materials	40
Total large truck loads	**15,130**

2.4.2.6 Project Roads

Project roads consist of all roads that would be newly constructed or existing roads that would be reconstructed to build and operate the project. Project roads do not include the haul routes which are described in Section 2.4.2.4.

Each turbine manufacturer has slightly different equipment transport and crane requirements. These requirements dictate road width and road turn radius. For the purposes of analyzing environmental impacts, the Applicants have estimated the amount of road construction needed to install the Siemens SWT-2.3-93 MW turbine. It should be noted that the road footprints used for analysis in this Draft EIS do not fully represent the actual level of ground disturbance that would occur as a result of construction of the project. A 20-foot wide roadbed with 10-foot shoulders on each side has been used to estimate the project road footprints. These numbers do not include the added cut and fill that would be needed to site the project roads through the varying topography in the project area while maintaining grade and turn radius requirements.

From the north end of the project area, the existing Monument Springs Road from Three Creek Road would be widened, regraded in places, and upgraded to an all-weather gravel surface. New all-weather roads would be constructed to link the turbines. The roads that link the turbines would be designed to enable the transport of large cranes between each individual turbine.

BLM, Idaho Department of Lands (IDL), and Twin Falls County and Elko County would require that all roads be designed, built, surfaced, and maintained to minimize disturbance, and to provide safe operation conditions at all times. Maximum speed limits of 20 miles per hour would be posted and enforced on all project roads for all vehicles. Project roads would be 20 feet wide with two 10-foot shoulders and would consist of 12 inches of ¾-inch gravel over compacted native sub-base material.

Transmission line construction would require the development of up to 19 miles of new road; this road would follow the transmission interconnect line, but would not cross Cottonwood Creek. The transmission interconnect line road would be 12 feet wide. Preliminary analysis of the transmission line route indicates that existing roads could be used to provide access to the transmission structures to some extent. The exact location of the transmission interconnect line and associated roads would be determined during the final design of the project. For the purposes of this EIS, it is assumed that the transmission line road would be located directly underneath the transmission line corridor.

Although the transmission line would span Cottonwood Creek, it would not require a road crossing of this creek.

Based on final project design and the results of geotechnical investigations, cut and fill volumes would be determined prior to construction of all project roads. Where possible, crossings at low spots or drainage courses would be at-grade with no culverts or extensive fill.

2.4.2.7 Blasting

Based on the final design of the roads and results of the geotechnical investigation, it may be necessary to conduct blasting of rock to reach the necessary slope and gradient for the road. Engineering drawings and on-the ground staking would be provided for these areas. Blasting may be required for turbine foundation construction. For these areas, engineering drawings would be provided and on-the-ground engineering staking would occur. Each location would be assessed with regard to apparatus or structures in the vicinity and a determination made of the suitability of that location for blasting.

Any and all required blasting would be conducted in accordance with a Blasting Control Plan, to be provided for review and approval by BLM and land owners prior to construction. All blasting shall be designed and carried out by a licensed specialist. Periodic seismograph monitoring of blasts shall be conducted as deemed appropriate.

2.4.2.8 Laydown Areas

During construction of the project, up to 4-acre laydown areas would be established to mobilize construction activities and store equipment and material. These areas would be used for temporary field office trailers, parking for construction vehicles, construction employees' vehicles, other construction equipment, fueling stations, and temporary material staging and laydown. All laydown areas would consist of crushed gravel surfaces that would be removed following construction.

2.4.2.9 Concrete Batch Plant

A portable concrete batch plant would be used during construction activities. An approximately 10-acre batch plant site would be located on private property centrally located within the project area. The batch plant is expected to operate 6 days a week for about 6 months and would use cement delivered from private sources. The batch plant would be powered by an approximately 600 kilowatt portable diesel generator with fuel capacity of about 1,500 gallons. The diesel fuel storage tank would be aboveground with secondary containment and spill kits present.

The concrete batch plant would use water from an off-site private source with an existing water right. Water would be trucked from the off-site source to the batch plant. Water consumption for the batch plant is anticipated to be approximately 35,000 gallons per day. A Temporary Change Application would be submitted to the Idaho Department of Water Resources to allow change of use of the existing water right for construction of the project.

Concrete washout operations would be centralized at the batch plant. Concrete chutes would be washed into a small depression that would be created within the batch plant area. At the end of concrete production for the construction activities, residual concrete from the washing operations would be broken up and removed for landfill disposal or buried in place, and the depression would be filled in.

2.4.2.10 Quarry

A new quarry site would be needed to obtain rock for road base, surfacing of substations and laydown areas, and for aggregate in the concrete produced at the batch plant. The quarry would be sited on private land near the central portion of the project. It is estimated that the quarry would disturb approximately 8 acres. Both the surface and mineral estates for the quarry site are privately owned.

2.4.2.11 Rock Crusher

A rock crusher is required for the project to provide appropriately sized aggregate for fill and road base. The rock crusher would have an average capacity of approximately 20,000 tons per day and would contain several dust-suppression features including screens and water-spray. In accordance with design features, the rock crushing area would be sprayed by a water truck to suppress dust. Dust-control measures would be operating at all emission points during operation of the rock crusher, including start-up and shutdown periods, as would be required by the Idaho Department of Environmental Quality air quality permit.

2.4.2.12 Wind Turbines

Wind turbines consist of three main physical components that would be assembled and erected during construction: the tower, the nacelle, and the rotor blades. The wind turbines under consideration for the project would have tower heights of up to 262 feet, rotor diameters of up to 331 feet, and have a maximum blade height of 427 feet above the ground (Figure 2.4-5).

If the project is approved, the Applicants would select and order a particular brand, model, and megawatt capacity of wind turbine generators. The selection would be based on the model that best meets the site-specific wind speeds and patterns at China Mountain, can be manufactured and delivered to meet the project construction schedule, and is the most cost effective to the Applicants. For the purpose of analysis in this EIS, the Applicants have used the specifications of the Siemens SWT-2.3-93 MW turbine. For analysis purposes, a 2.0 MW capacity was assumed for each turbine. The actual capacity may vary depending on the turbine selected. As stated in Chapter 1, the Applicants have applied to construct a wind energy facility that would produce up to 425 MW of power. Components of a typical wind turbine are described below.

Tower: The tower is a freestanding tubular, painted steel structure that is manufactured in multiple sections depending on height. An access door is located at the base of each tower. An internal ladder runs to the top of the tower just below the nacelle. The maximum height of turbines under consideration for the project is 262 feet.

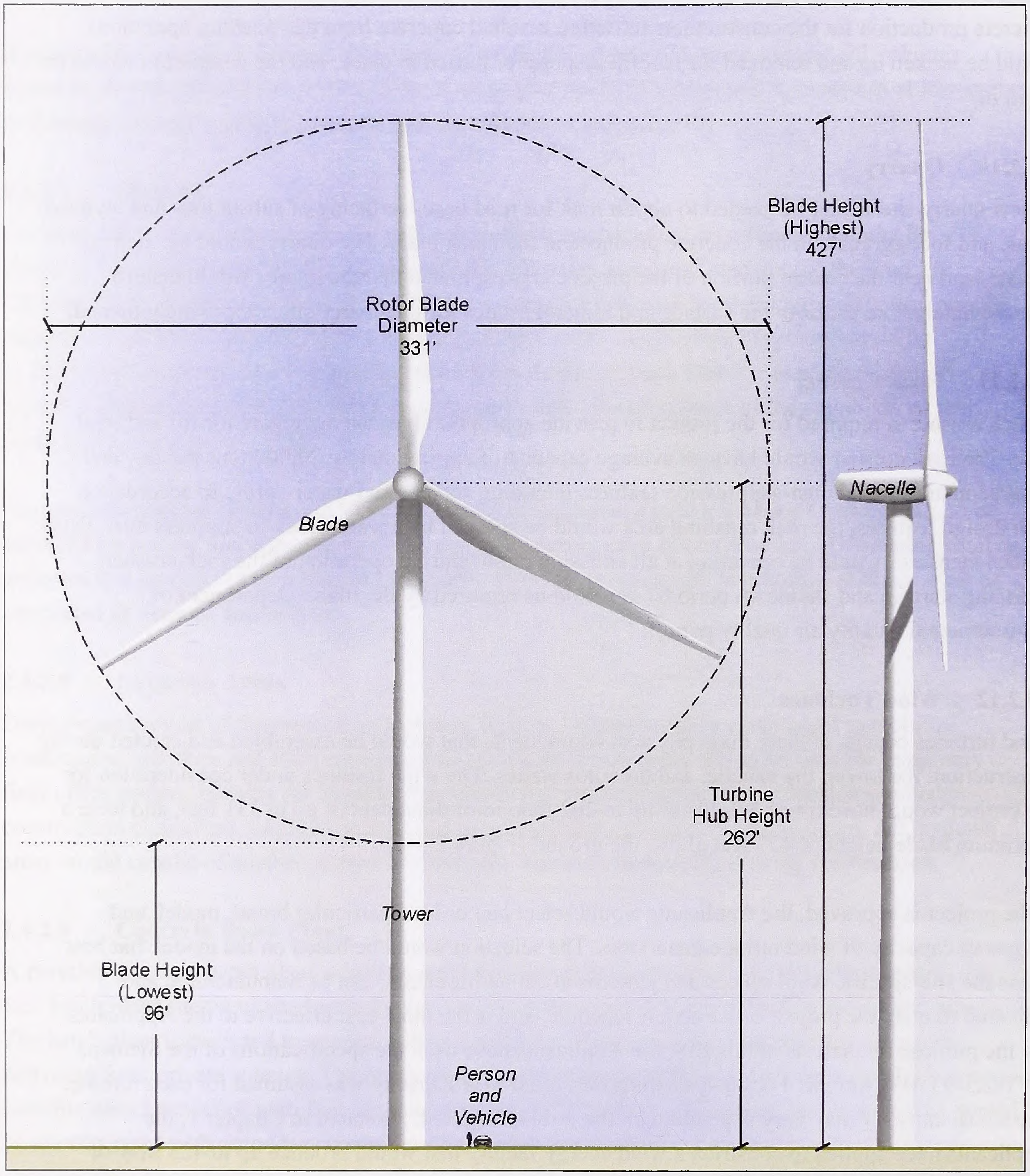

Figure 2.4-5. Typical Wind Turbine.

Nacelle: The gearbox, generator, and various control equipment are enclosed within the nacelle, which is the housing of the unit that protects the turbine mechanics from environmental exposure. The nacelle can rotate at the top of the tower to keep the turbine pointed into the wind to maximize energy capture.

Rotor Blades: Wind turbines are powered by three blades connected to a central rotor hub. The rotor blades are typically made from a glass-reinforced polyester composite material. Wind blowing across the blades causes rotation of the central rotor hub. The rotor blades typically turn at less than 20 revolutions per minute. The central rotor hub is connected to a gearbox where the speed of rotation is increased. The gearbox is attached to an electric generator that converts the wind energy to electricity. The maximum rotor blade diameter under consideration for the project is 331 feet (Figure 2.4-5).

The first step to installing a wind turbine is to establish a construction area and construct the foundation. One of two foundation designs would be used, matt or pier, depending on the type of substrate (soil or rock) and the results of geotechnical investigations. Mat foundations would be approximately 50 feet in diameter and 8 to 10 feet in depth and would be suitable in soil or loose rock (Figure 2.4-6). Pier foundations would be approximately 16 to 20 feet in width and 25 to 30 feet in depth and would be used in solid rock environment (Figure 2.4-7).

A construction area would be established at each turbine location to accommodate the turbine crane and a place to lay turbine components during construction (Figure 2.4-8). The crane pad would be constructed and maintained for the life of the project to accommodate a crane present during construction and any maintenance activities during operation. The typical acreage needed to install a wind turbine would be 2.1 acres in the short term and 0.27 acres in the long term; the majority of the initial disturbance acreage would be revegetated following construction.

To lift the tower segments into place would require the use of a large crane. The crane would have a tracked base, a main lattice-lifting arm that would be over 300 feet in length, and would be capable of lifting over 80 tons. The large crane would be delivered to the project in pieces that would be transported on 20 semi-truck loads via the inbound haul route. When the large crane components first would arrive onto the project site, they would be taken to the location for the first turbine installation. The crane would be assembled on that site, and then used to install the wind turbine. Once the turbine at that site is erected, the crane would be driven ("walked") to the next turbine site using the crane's tracked base. The requirements for walking the cranes would set many of the design parameters for the project roads, including road width and slope. At locations where the road could not be built within the tolerances for walking the crane, the crane would be disassembled, moved to the next site, and reassembled.

Figure 2.4-6. Typical Mat Foundation.

Figure 2.4-7. Typical Pier Foundation.

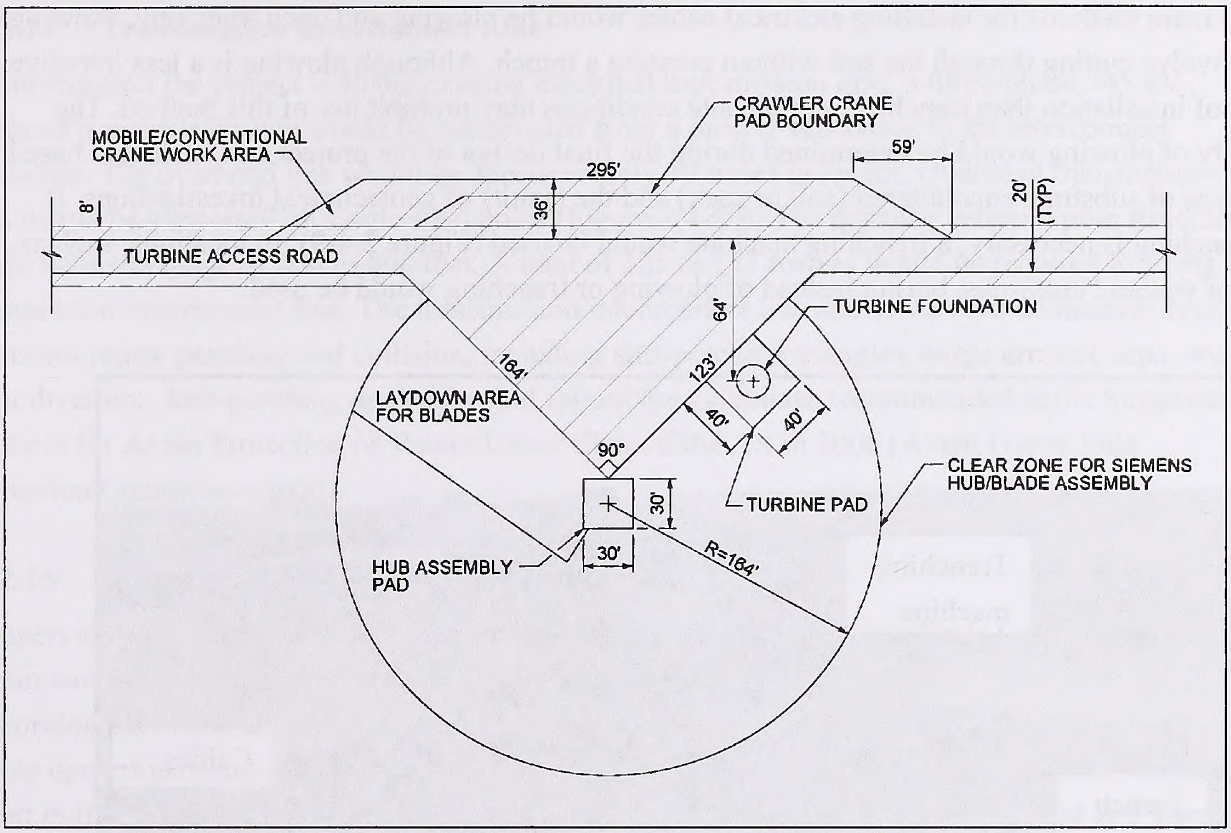

Figure 2.4-8. Detail of Typical Construction Area for Turbines.

Wind turbines would be installed as large, pre-assembled components that would be put together at the turbine site. The tower, which would consist of three or four sections, would be installed first. The sections would be lifted one at a time, and bolted together in place. Once the last tower section is in place, the nacelle would be secured to the top of the tower. Finally, the rotor (hub and blades) would be lifted into place and secured onto the nacelle. Installation of the rotor would require the use of a small "helper" crane. Once the crane and all wind turbine components have arrived at a site, assembly of the major components would take 1 to 2 days.

2.4.2.13 Underground Collection System

An underground electrical cable would connect each turbine to one of the two project substations. The underground electrical cable would transfer generated energy from the wind turbines to the project substation(s). These electrical cables would make up the underground collection system.

The underground collection system would be placed a minimum of 48 inches below grade. The final depths would be determined by the geotechnical conditions and the manner in which the cable is installed. Direct buried cable would have a warning tape placed over the top of the cable at a depth of 12 inches to act as a visual reminder of the cable's presence for future site work. All underground collector lines would be buried in a manner that minimizes additional surface disturbance (e.g., along roads or other paths of surface disturbance to coincide where possible).

The two main methods for installing electrical cables would be plowing and open trenching. Plowing would involve cutting through the soil without creating a trench. Although plowing is a less intrusive method of installation than trenching, certain site conditions may prohibit use of this method. The feasibility of plowing would be determined during the final design of the project and evaluated based on the type of substrate encountered (soil or rock) and the results of geotechnical investigations. If open trenching is necessary, a trenching machine would be used (Figure 2.4-9). In locations, such as stream or wetland crossings, boring instead of plowing or trenching would be used.

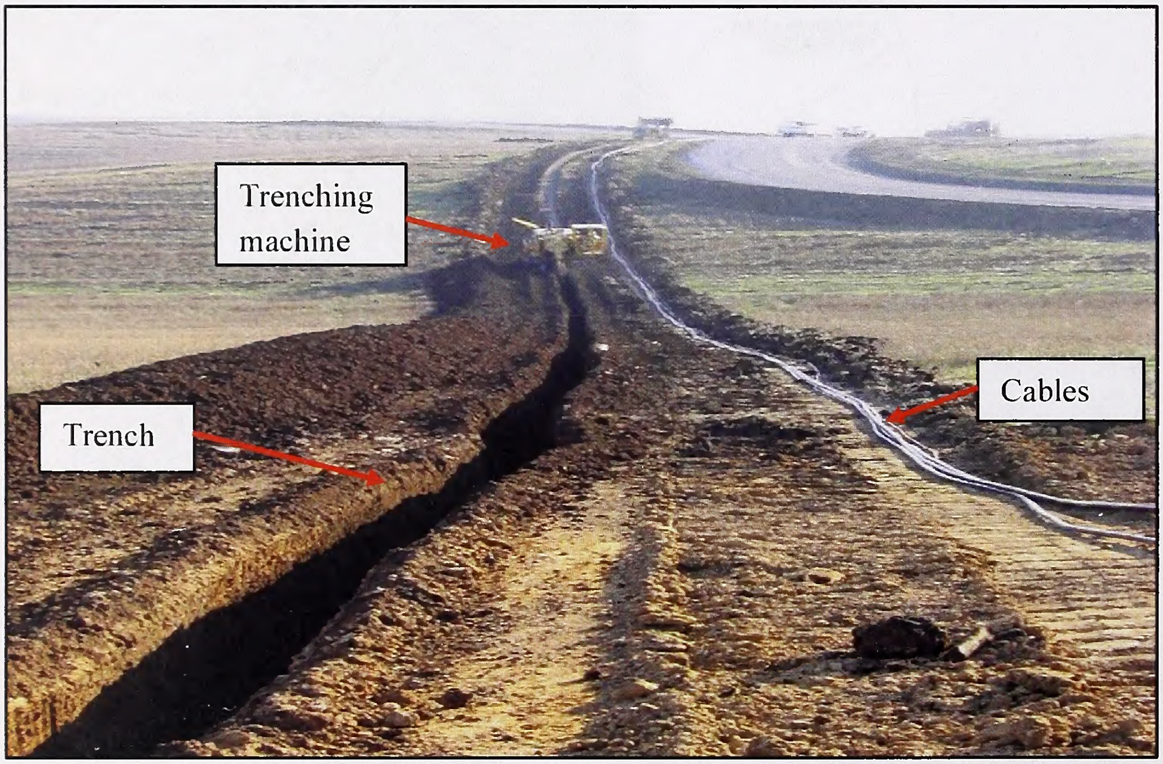

Figure 2.4-9. Underground Collection System Installation by Trenching.

If native materials are found to provide insufficient thermal conductivity (i.e., allow heat to dissipate from the cables), engineered backfill may need to be used. This backfill would be a soil type sufficient to radiate the heat from the cables. The engineered backfill would only be used in the trenches and only to an amount sufficient to radiate the necessary heat from the cables. The remaining depths of the trenches would be filled with native material from the site.

Excess excavation materials would be used to raise the elevation of roads or placed on the inside of road curves to increase the road width in those areas. If suitable, excess material may be stockpiled for use in reclamation activities.

In most areas, the cable would run along one side of the project roads to reduce the overall project footprint. For areas near the substation(s) where several runs of cable would be in the same area, cable trenches would occur on both sides of the road.

2.4.2.14 Transmission Interconnect Line

To interconnect the project with the existing electrical transmission grid, a three-phase 345 kV overhead transmission line would be constructed from a project substation to the interconnect substation. The overhead line would be approximately 19 miles in length. Overhead transmission lines would be supported on single steel poles (Figure 2.4-10). The distance between pole structures would be in the range of 600 to 800 feet. A total of 125 to 167 towers would be required to string the transmission interconnect line. The transmission interconnect line and towers would include devices to prevent raptor perching and collision, including anti-perching triangles, surge arrestor caps, and flight diverters. Anti-perching devices would follow the guidelines recommended in the Suggested Practices for Avian Protection on Power Lines: State of the Art in 2006 (Avian Power Line Interaction Committee, 2006).

2.4.2.15 SCADA and Fiber Optic Communications

A Supervisory Control and Data Acquisition System (SCADA) and Fiber Optic Communications system would be installed to collect operating and performance data from each wind turbine, meteorological tower, and the wind energy facility as a whole. The SCADA would also provide for remote operation of the wind turbines from the O&M facilities. The wind turbines would be linked by a fiber optic line to a central computer in the O&M facility at Monument Springs Road and Three Creek Road. The fiber optic line would be buried a minimum of 18 inches below grade in a trench along Monument Springs Road and would connect the project to the O&M facility at Monument Springs Road and Three Creek Road and the substations. The fiber optic lines used for SCADA communication would be placed in the same trenches used for the underground collection system where possible. From the project substations, the fiber optic lines running to the interconnect substation would be mounted near the top of the transmission line (Figure 2.4-10).

2.4.2.16 Substations

The energy generated by the wind turbines would be delivered to the two project substations via the underground collection system. The substations would increase the voltage of electricity from 34.5 kV to 345 kV, to match the voltage of the existing transmission line. A small control building would exist within the substation(s) to house electrical metering equipment and the SCADA system for the wind turbines. Riser poles at the substation connection point would have a pole-top, three-phase switch (operable from the ground), surge protection, insulated cable terminations and jumper wires, wildlife boots (a protective covering over cable terminators), and lightning arresters. Transformers would be filled with non-polychlorinated biphenyl oil.

Major equipment would be set by crane and either bolted or welded to the foundations to resist seismic forces. Oil spill containment basins would be installed around oil-filled transformers and other equipment. Spill Prevention Control and Countermeasures plans would be prepared for each substation.

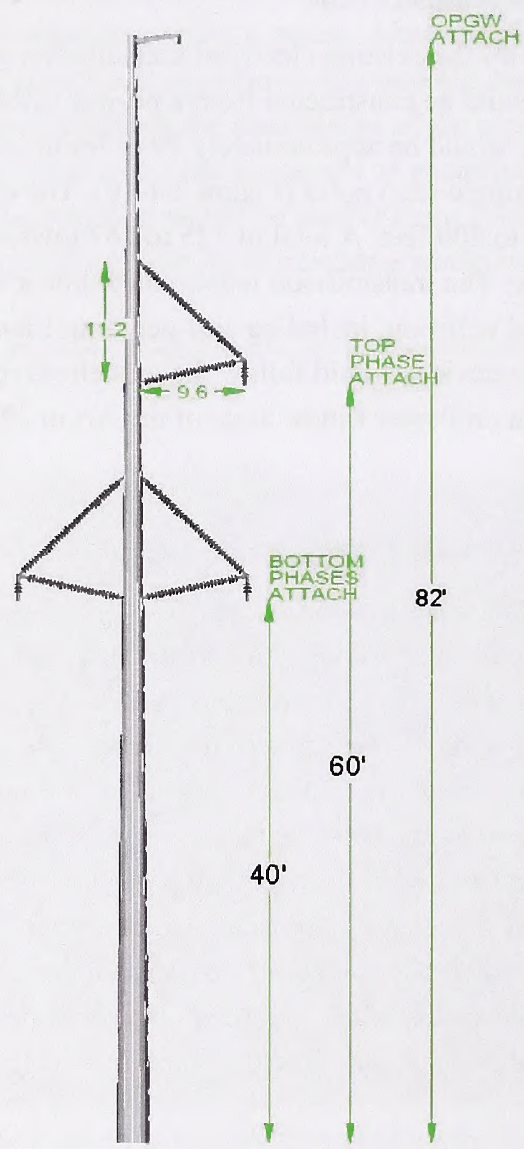

Figure 2.4-10. Typical Monopole Transmission Line Structure.

Project Substations

The project substations would require the development of three new sites with dimensions approximately 375 feet by 400 feet (3.5 acres). The substations would be sited on IDL lands and private lands. The substation sites would be graveled and fenced with an 8-foot high chain link fence and would include a small control building and an area to park utility vehicles.

Construction of substations would begin with clearing vegetation and topsoil from the site. Topsoil would be stockpiled at the site for use in project reclamation. The site would then be graded to subgrade elevation. Structural footings and underground utilities, along with electrical conduit and grounding grid would be installed, followed by aboveground structures and equipment. Chain link fence would be constructed around the substation for security and to restrict unauthorized persons and wildlife from entering the substation. The site would be finish-graded and gravel surfaced, and the

temporarily disturbed area outside the fence would be reclaimed and seeded with a BLM-approved seed mix.

Interconnect Substation

The overhead transmission line would transmit electricity from the project substation to a interconnect substation. The interconnect substation would be located adjacent to the existing NV Energy Midpoint to Humboldt 345 kV transmission line. It would be accessed off Highway 93 south of Jackpot, Nevada. A total of 5 miles of existing roads would be used to reach the interconnect substation site.

The interconnect substation would require the development of an approximately 3-acre site. It would be sited entirely on public lands at an area that has existing disturbance from a stock tank and concentrated cattle grazing. Existing roads would be used, to access the interconnect substation site.

2.4.2.17 Meteorological Towers

Up to three meteorological towers would be needed to monitor and document wind conditions for the life of the project. The final location of the meteorological towers would be determined by the final project layout and selected turbine type. Meteorological towers would be located on ridgelines close to turbine strings and distributed within the project area. Meteorological towers would not be located within 500 feet of seeps, springs, streams or wetlands. The meteorological towers would be up to 260 feet tall and constructed of a steel lattice structure that would be anchored to a reinforced concrete foundation. The foundation would be approximately 16 feet in diameter and up to 30 feet deep. The towers would be built by assembling prefabricated sections that would be lifted by a crane and bolted together. Each meteorological tower would be connected to the project SCADA system (Section 2.4.2.15) via a fiber optic line. The trench with the fiber optic line would connect with the closest underground collection system (Section 2.4.2.13) trench where it would be collocated with the other cables and communication lines.

Approximately 1 acre of short-term disturbance would occur at each meteorological tower. Following construction, the area surrounding the tower would be regraded to its original contour and reseeded with a BLM-approved seed mix. Long-term ground disturbance at each tower would be approximately 0.25 acre.

2.4.2.18 O&M Facilities

The project would require the establishment of two 4,500 square foot O&M facilities that would provide office space, a kitchen, bathrooms with a shower and utility sink for project employees, computer monitoring and control and communication for the wind turbines, and a shop facility with small maintenance parts. Exterior features would include vehicle and equipment parking with a turnaround area for large vehicles, outdoor lighting, and full perimeter fencing with 8-foot chain link fence and gated access. Landscaping around the O&M facilities would consist of local native shrub and grass species. The buildings would be painted to blend with the surrounding landscape colors.

One of the O&M facilities would be sited on public land at the intersection of Three Creek Road and Monument Springs Road (northern O&M facility). The other would be located in the central portion of the project area on lands under the management of IDL (central O&M facility). Each O&M facility, including parking areas, would have a long-term footprint of approximately 2 acres.

The northern O&M facility would serve as the main O&M facility for the project and would include a site compound within which the facility would be located. The site compound would essentially be a long-term laydown area that would be used throughout the life of the project for equipment storage, truck parking, and other uses. The site compound would be cleared of vegetation, graded, and covered with 6 to 12 inches of gravel.

The proposed sites for the O&M facilities would be cleared of vegetation and graded. A slab foundation would be poured and trenches for utilities would be dug. These pre-engineered buildings would be delivered to the site on trucks and assembled on-site.

The O&M facilities would require groundwater wells and septic tanks that would be located nearby. All permits required for development of groundwater wells and septic systems would be obtained from the State of Idaho and Twin Falls County prior to construction.

Electricity would be provided to the northern O&M facility located at the north end of the project area by connecting to an existing local 7.2 kV distribution line that is located along Three Creek Road and 1 mile east of Monument Springs Road. One mile of new underground distribution line would be buried in a linear ROW along Three Creek Road. The total footprint of disturbance would be less than 1 acre. Electricity to the central O&M facility would be provided by backflow from the transmission interconnect line.

2.4.2.19 Water Use

Water would be used for a variety of purposes during construction of the project. The primary use of water during construction would be for dust control and roadbed compaction. Secondary uses would include the concrete batch plant, dust suppression at the rock-crushing unit, equipment washing, and other miscellaneous uses. Water use would vary by alternative from 20 million gallons (61 acre-feet) to 40 million gallons (122 acre-feet). This amount of water when used for agricultural uses would produce from 19 to 38 acres of alfalfa in 1 year (Wright, 1988). Assuming an 8,000-gallon water delivery truck, 2,500 to 5,000 truck trips would be required to deliver water needed for construction. All water would come from an off-site private source utilizing an existing water right. A Temporary Change Application would be submitted to the Idaho Department of Water Resources to allow change of use of the existing water right for construction of the project.

2.4.2.20 Stormwater Control

The Applicants would obtain a National Pollutant Discharge Elimination System permit for stormwater discharges associated with Wind Energy Facility, transmission line construction, and road construction activities in the states of Idaho and Nevada. As part of the permit, the Applicants would

develop a Stormwater Pollution Prevention Plan for the site and would implement stormwater design features.

2.4.2.21 Hazardous Materials

Materials required for construction of the project that are classified as hazardous materials would be limited to small quantities of paint and solvents and lubricants used for equipment maintenance. Hazardous and non-hazardous materials used or stored at the project area would be managed with precautions taken to prevent them from impacting soils and water. The Applicants would develop a Hazardous Materials Management Plan to address transportation, storage, use, and disposal of hazardous materials expected to be present during project activities. Hazardous wastes generated at the project area would be removed from the site and property disposed at an appropriately permitted facility.

2.4.2.22 Petroleum Products

Petroleum products such as gasoline, diesel fuel, and crankcase oil would be present within the project area during construction, O&M, and decommissioning activities. These products would be used to fuel and lubricate vehicles and equipment and would be transported in containerized trucks or in other approved containers under appropriate methods. Petroleum materials would be properly stored to prevent leakage or accidental spills. The Applicants would develop a Spill Prevention Control and Countermeasures Plan for the project.

Vehicle and equipment refueling would be conducted at five fueling stations located at the laydown yards and the northern O&M facility. The fueling stations would primarily service light-duty vehicles. Each fueling station would consist of an approximately 500-gallon aboveground storage tank within secondary containment. Each station would be equipped with a spill kit and would be located in areas that would not be disturbed for other construction purposes. In addition to the fueling stations, 100-gallon or smaller truck-mounted tanks would be used for fueling heavy equipment remotely on location.

2.4.2.23 Solid Waste and Human Waste

"Waste" means all discarded matter, including but not limited to trash, garbage, refuse, filters, welding rods, equipment, or human waste. Approved refuse containers would be used throughout the project area. Construction waste materials would be removed from the project area and properly disposed of at a permitted landfill. Portable toilets would be provided for the construction crew. Sanitary waste from the portable toilets would be periodically removed by a licensed hauler to a suitable municipal sewage treatment facility.

2.4.3 OPERATION AND MAINTENANCE

2.4.3.1 Haul Routes

During operation of the project, the inbound haul route (northern inbound haul route or southern inbound haul route option 1 or option 2) would not be used on a regular basis by project personnel or

equipment. Project personnel would not use the haul route to access the project. However, the haul route would be open to the public for travel and access within the project area. For regular O&M activities, the project would be accessed from the north off of Monument Springs Road.

In the event of major turbine maintenance or replacement of a turbine or substation transformer, the large turbine component delivery trucks would need to access the project area by the inbound haul route. Major turbine maintenance is estimated to occur once per year. During these major maintenance events, increased traffic on the haul route would occur.

Road maintenance of the haul route would occur on a regular basis. Culverts, drains, or other water management devices would be kept clear to allow effective drainage. Roadside ditches, cut or fill slopes, and culvert outflows would be inspected regularly to determine if excessive erosion or down cutting is occurring. All sediment control features would be maintained to the originally designed capacity. The haul route would not be regularly plowed of snow during winter months. However, if major turbine or substation maintenance is required during the winter, the haul route would be plowed to allow temporary access to the project area.

2.4.3.2 Project Roads

Road maintenance would be performed on a regular basis on all project roads. Regular snow removal would be required during the winter months to maintain access to the turbines and substations. Minor amounts of surface dragging, blading, or grading would be required each year after the spring thaw to remove vehicle ruts. Other similar surface work may be needed after periods of heavy rainfall. Road repairs would be completed when needed.

Culverts, drains, or other water management devices would be kept clear to allow effective drainage. Roadside ditches and culvert outflows would be inspected regularly to determine if excessive erosion or down cutting is occurring. If erosion or down cutting is occurring, the Applicants would consult with the BLM, IDL, or Twin Falls and Elko Counties before completing needed repairs.

Primary access to the project site for O&M would be from Monument Springs Road off of Three Creek Road. This would result in the use of the one-lane road over the Salmon Falls Creek Dam by project vehicles, employee vehicles, delivery vehicles, and visitors because this route provides the shortest access to the project area. On occasion, larger construction equipment may be needed for major maintenance and this equipment would access the project area by the approved haul route. If a major unplanned turbine maintenance or component failure occurs, semi-trucks with replacement parts, cranes and associated equipment would access the project area by the approved haul route.

2.4.3.3 Wind Turbines

Aviation Lighting and Painting on Wind Turbines and Meteorological Towers

Federal Aviation Administration (FAA) regulations require aircraft warning markings on all structures taller than 200 feet. The wind turbines and meteorological towers for this project would be taller than 200 feet, so marking would be required, including painting the towers white and installing

lighting. Once the project layout is finalized, a project lighting plan would be developed using the guidance from *FAA Technical Note: Developing Obstruction Lighting Standards for Wind Turbine Farms*, published by FAA in November 2005. Aviation warning for the wind energy project would include medium intensity red strobe warning lights, placed on the nacelles of the turbines on each end of a turbine "string" plus every third or fourth turbine. Once the exact marking plan is determined, it would be submitted to the FAA by the Applicants for review and approval. To minimize project lighting, turbine lights would be synchronized to flash concurrently rather than in a random pattern.

Scheduled Wind Turbine Maintenance and Regular Facilities Inspections

The project O&M plan would include the scheduled minor and major maintenance and inspection activities anticipated during the calendar year and would anticipate these activities for a minimum 3-year period. Regularly scheduled maintenance and inspections would be performed on a daily, weekly, or monthly basis depending upon the work needed. Scheduled maintenance would include visual inspections, lubrication of moving parts, and replacement of gear oil and other fluids. Routine maintenance would be completed with common hand tools and electrical testing equipment. No vehicles other than project pick-up trucks or sport-utility vehicles would likely be needed.

Unscheduled Wind Turbine Maintenance

Unscheduled maintenance would likely be required in order to maintain the operating efficiency of the project. During the first several years of operation, the turbines would be new and major repairs are not anticipated. However, the possibility cannot be disregarded. Any turbine experiencing mechanical difficulties that could result in safety or environmental risks or damage to the equipment would be taken off-line until repairs can be completed.

Minor Repairs and Component Replacement

Minor repairs to the turbines or faulty internal component replacement would be the most common form of turbine maintenance. These repairs could include the replacement of sensors, small motors, pumps (such as those for the hydraulic system or cooling system), and replacement of seals on the generator or gearbox. All of these types of repairs would be done using small tools and the turbine-integrated winch system. Additionally all of these repairs would take place within the contained turbine tower or nacelle.

Major Maintenance, Repairs, and Component Replacement

Although far less common, it is possible that major components could need to be replaced during the operational phase of the project. These components could include blades, generator, gearbox, or transformers. Such maintenance activities would require that a large crane be brought back to the site. Trucks would be needed to bring the crane to the turbine location where the crane would be assembled.

If a major component is damaged and requires replacement, the turbine would be stopped and placed out-of-service until the component replacement is completed. Once the crane and replacement

components arrives on-site and has been prepared for service (2 to 3 days), the actual component replacement would take 1 to 2 days to complete. Once the new component is installed, the crane would be removed from site and the turbine returned to service. This activity would be coordinated to minimize crane time on site. For example, and while not anticipated, blade washing may be needed to improve wind turbine performance.

Wind Turbine Replacement

The complete replacement of a wind turbine would be uncommon. Turbine replacement would only be necessary if there were problems with the tower or foundation. The replacement of a wind turbine would require the same sequence of events described in Section 2.4.2.12. The wind turbine components would be removed in the reverse order that they were installed. Each of the removed components that would not be used on the replacement wind turbine would be removed from the site. After the old components have been removed, replacement components are brought to the site. The wind turbine would be erected again using the appropriate combination of original and replacement components. Given the need to remove old components and bring new components to the site after the original wind turbine is dissembled, the entire wind turbine replacement activity could require the crane to remain on-site for 1 week or longer. The Applicants would contact the BLM/IDL/counties in advance of any replacement of a wind turbine.

2.4.3.4 Substations

If the wind energy facility is not operating, back-up power to operate the substations would be provided by backflow from the transmission line. In addition, each substation would be equipped with a back-up generator to supply the substations and turbines during emergency power outage and during start-up and/or scheduled maintenance. It is anticipated that each substation generator would be a 150 kW model powered by diesel fuel and would operate for up for to 7 to 10 days per year. Diesel fuel storage for the back-up generator would be approximately 150 gallons. The back-up generator would comply with all applicable State of Idaho and Environmental Protection Agency emissions standards for this type of unit and application. The back-up generator and fuel supply at each substation would be equipped with secondary containment to meet Idaho Department of Environmental Quality and Environmental Protection Agency requirements and adhere to the project's Spill Prevention Control and Countermeasures Plan. The project substations would be inspected regularly and undergo an annual inspection and maintenance cycle to ensure all protection equipment is functioning properly.

Maintenance to the substation transformer, switchgear, and buswork would require the substation be de-energized and the project shutdown. As much as possible, the Applicants would schedule this maintenance for low wind months of the year. Most substation maintenance activities could be performed during a single day each year. Unplanned major substation maintenance would include, but is not limited to, the replacement of a blown transformer. Replacement of a transformer would require complete shutdown of the project.

2.4.3.5 Overhead Transmission Line

O&M activities for the project transmission line would include visual inspection from the ground, climbing inspections, tower and wire maintenance, insulator washing in selected areas, insulator replacement, and roads repairs. No vegetation management is expected to be required.

Unplanned emergency maintenance or repair would include replacement of damaged lines or structures. Damage to structures could require cranes to remove and reinstall the structures. Trucks would be required to remove the damaged structures and deliver new structures to the site.

2.4.3.6 Meteorological Towers

Visual inspections of the metrological towers would be conducted on regular basis. Any damaged parts would be replaced. No cranes would be required for repair work on the meteorological towers.

2.4.3.7 Operation and Maintenance Facilities

The northern O&M facility and site compound that would be located at the intersection of Three Creek Road and Monument Springs Road would provide the primary management of the project and personnel. Up to 24 operations workers would check in at the northern O&M facility each day to receive their daily work assignments. Workers that would be performing maintenance on turbines or other project components would obtain needed parts and maintenance trucks from the northern O&M facility before traveling to perform the needed repairs.

The central O&M facility would provide some office space, a meeting room, restrooms, employee break room, a vehicle and equipment parking area, and a shop. The facility would also contain communication equipment and a spare parts storage area. Ambient conditions within the central O&M facility would be maintained to meet equipment operating requirements and to support the presence of maintenance personnel.

Water use at the O&M facilities would consist of sanitary and kitchen uses and for truck washing or occasional road watering during project operation. Water use at the O&M facilities is estimated to be 5,000 gallons or less per day.

The O&M facilities would be equipped with a back-up generator to provide electrical service during power outages and during start-up and/or maintenance. It is anticipated that the generator would be a 150 kW model powered by diesel fuel that could operate for up to 10 days per year. Diesel fuel storage for the generator would be approximately 150 gallons. The back-up generator would comply with all applicable Idaho and Environmental Protection Agency emissions standards and would adhere to the Spill Prevention Control and Countermeasures plan.

Maintenance requirements for the O&M facilities would be performed on an as-needed basis. Exterior maintenance would be performed in a timely manner to maintain a presentable appearance to the general public. Housekeeping and area cleanup would be done on a regular basis to avoid the buildup of litter and other unsightly accumulation of materials.

2.4.3.8 Underground Collection System

The underground collection system should operate for the life of the project without the need for maintenance. In the rare occasion that an underground cable is damaged, the trench would be excavated, the cable repaired, and the trench backfilled and compacted.

2.4.3.9 SCADA System and Fiber Optics Communications

The SCADA system would be checked by operations personnel on a daily basis. The SCADA system should operate for the life of the project without the need for regular maintenance. In the rare occasion that an underground fiber optic line is damaged, the trench would be excavated, the cable repaired, and the trench backfilled and compacted.

2.4.4 DECOMMISSIONING

2.4.4.1 Wind Turbines

The lifetime of the project is estimated at 30 years. At that time, the options for the project would be to either decommission, which is described in detail below, or to repower the project using newer model turbines. For the purposes of analysis in this EIS, it is assumed the project would be decommissioned, all existing equipment would be removed from the project area using the approved haul route and the land reclaimed.

Decommissioning activities would be similar to turbine construction but in reverse order. Turbines including the blades, nacelle, and tower would be disassembled and removed. The concrete and steel in the foundations would be broken-up and removed to a depth of 3 feet below grade and back-filled with native soil. The area would then be regraded and revegetated with a BLM-approved seed mixture.

2.4.4.2 Substations

Once the project and transmission line are de-energized, the substations would be disassembled. All project components, including transformers, switchgear and buswork, would be removed and placed onto trucks using a small crane. The steel structures, control building, grounding grid, and fences would be disassembled and removed. The gravel placed in the substation would be removed. The foundations would be broken up and removed from the project site. The grounding grid would be removed. The disturbed area would then be regraded and revegetated with a BLM-approved seed mix.

2.4.4.3 O&M Facilities

Decommissioning of the O&M facilities would start with the water wells being capped and the electrical power connections disconnected. The buildings would then be demolished. The foundations would be broken up and, trucked to an appropriate off-site disposal facility along with the demolished buildings. All fencing would be removed and the site would be regraded and revegetated with a BLM-approved seed mix.

2.4.4.4 Meteorological Towers

The disassembly and removal of the meteorological towers would essentially be the same as their installation, but in reverse order. Each section of the tower would be unbolted and then lifted to the ground using a crane. Once the tower is disassembled, it would be loaded on a truck and removed from the project area. The foundations would be removed per the requirements of the ROW grant with the concrete and steel in the foundations broken-up and removed to a depth of 3 feet below grade. Disturbed areas would be regraded and revegetated with a BLM-approved seed mix.

2.4.4.5 Underground Collection System

Underground trenches would be opened and the cables would be removed. The cables would be cut into manageable lengths or coiled and removed from the site. The trenches would then be back-filled with native soil, compacted, and revegetated with a BLM-approved seed mix.

2.4.4.6 SCADA System and Fiber Optics Communications

Decommissioning of the SCADA system would occur at the same time and manner as the underground collection system.

2.4.4.7 Transmission Interconnect Line

Assuming the transmission line no longer serves a purpose for the site; it would be disassembled and removed. Initially, the wires would be removed from the tower hangers, coiled, and removed from the site. The structures would then be disassembled and removed, including grounding rods to 6 inches below grade. The areas around the structures, along with any roads that were necessary for the project, would be decommissioned. All disturbed areas would be revegetated with a BLM-approved seed mix.

2.4.4.8 Project Roads

Once the ROW grant expires or is relinquished, new project roads constructed specifically for the project would be decommissioned. Existing roads that were reconstructed for the project, such as Monument Springs Road (a Twin Falls County road), would not be decommissioned. The pre-project level of access to public, private, and IDL lands would be maintained following decommissioning of all new project roads. Once all the equipment and materials have been removed from an area and the road to that area is no longer needed, the road surface and bed materials would be removed down to grade. Any materials native to the site would be scattered across the site and foreign materials would be removed. Roads decommissioned would be regraded to original contours if the extent of cut or fill makes such regrading practical. Access to the project area during decommissioning would be the same as described under Section 2.4.2.5.

2.4.4.9 Haul Route

None of the proposed inbound haul routes would be decommissioned at the end of the 30-year permit period.

2.4.5 DESIGN FEATURES COMMON TO ALL ACTION ALTERNATIVES

Design features that will apply to all action alternatives include RMP stipulations and BMPs and are included in Appendix 2A. Appendix 2A contains design features that are common to all action alternatives. These design features have been gathered from a variety of sources including the Wind PEIS, the Record of Decision (ROD) for the 2005 National Programmatic Wind Environmental Impact Statement (EIS) as augmented by the BLM's Wind Energy Development Policy, Instruction Memorandum 2009-043, BLM's right-of-way handbook (H-2801-1), and the ROD's from the 1987 Jarbidge and 1985 Wells RMPs. These documents include a variety of differing RMP decisions including differences in restrictions for protection of wildlife. Because the China Mountain Wind Project spans both field offices, an attempt has been made to establish consistent seasonal restrictions and spatial buffers for wildlife. Differences in stipulations however, are unavoidable due to the separate land use plans. Additional design features that are included in this appendix were gleaned from the China Mountain Wind Project Interdisciplinary Team. Design features are an enforceable term and condition of granting ROWs for this project.

Design features are applied to projects to ensure that development is conducted in an environmentally responsible manner. The design features applicable to all action alternatives include relevant best management practices from the ROD for the Wind PEIS (BLM, 2005a) and the BLM ROW Handbook (H2801-1). These design features are designed to guide construction activities and development of facilities to minimize environmental and operational impacts. These include, but are not limited to, standards associated with overall project management, surface disturbance, facilities design, erosion control and revegetation, noxious weeds, hazardous materials, project monitoring and responsibilities for environmental inspection. Other design features that apply to all action alternatives have been included to further reduce potential impacts to resources.

Stipulations are developed through the land use planning process and are included in RMPs to ensure project compatibility with resources and/or land uses. Stipulations provide a level of protection for resources by restricting operation during certain times, restricting the location of operation, providing compliance standards and survey requirements, and/or providing guidance on resource management. Stipulations applicable to all action alternatives include those from the Record of Decision for the 1987 Jarbidge RMP and the 1985 Wells RMP. Because of the seasonal restrictions required for wildlife in the 1985 Wells RMP (Appendix 2A), construction activities would be restricted in the Nevada portion of the project area unless it could be shown that no resource issues exist at the time of construction. Stipulations from the 1987 Jarbidge RMP that are proposed for amendment in this EIS are not included in Appendix 2A.

For golden eagles, consultation with the United States Fish and Wildlife Service under the Bald and Golden Eagle Protection Act of 1940 as amended will be required. BLM has recently issued an Information Memo (IM No. 2010-156; July 2010) which provides current direction on analyzing golden eagles in NEPA documents for renewable energy projects on public lands. The Applicants will be required to prepare an Avian Protection Plan. Approval of the Avian Protection Plan by United

States Fish and Wildlife Service will be required prior to BLM authorizing a ROW grant for this project.

2.4.6 MITIGATION COMMON TO ALL ACTION ALTERNATIVES

The following mitigation is recommended for each action alternative. Whether this mitigation would be required will be documented in the ROD. Mitigation is addressed in Chapter 4 where predicted project impacts are analyzed without, and then with applied mitigation measures.

2.4.6.1 Fish and Wildlife Mitigation

Cut-in speed of turbine rotors would be altered from dusk to dawn between late summer and early fall *(August 15 to October 15*) so that rotors would not begin turning in low winds. This mitigation would reduce the potential for fatalities during the bat migration season.

Rocky breaks (rock outcrops and cliff faces) would be avoided during construction of the transmission line road to minimize potential impacts to roosting bats.

A portion of the new road crossing at the headwaters of North Fork Salmon Falls Creek would be rerouted to the north so that the road is greater than 500 feet from the stream. This mitigation would reduce the potential for sediment delivery to the North Fork of Salmon Falls Creek from this segment of project road.

It is recommended that the permanent meteorological towers within 1.9 miles (3 kilometers [km]) of greater sage-grouse seasonal habitats would be self-supporting solid steel (not lattice) construction to minimize potential perching sites for raptors and corvids.

2.4.6.2 Fire Mitigation

Wind turbines would be shut down during fire events within the project area. This would reduce the potential for wind turbulence down-wind from the rotating turbines that could create unpredictable fire behavior. The rotating turbine blades could also cause possible radio communications interference between fire fighters, incident command, aircraft, and the South Central Idaho Interagency Dispatch Center. This mitigation would help reduce potential endangerment to fire fighters and maintain essential radio communications during fire suppression activities.

2.4.6.3 Cultural

Treatment strategies developed to mitigate impacts to affected cultural sites would incorporate a flexible program of monitoring, surface reconnaissance, surface collection, surface transect units, controlled excavation, and laboratory analysis and documentation to ensure the recovery of sufficient data before a site is affected by project activities. Field studies would be designed to provide determinations of effect, as well as to determine if an impact area contains portions of a site that contribute to eligibility on the National Register of Historic Places. Revisions to these methods, based on in-field decisions, may be necessary as fieldwork progresses.

2.5 ALTERNATIVE B1 (APPLICANTS PROPOSED ACTION)

The Applicants have submitted an application for a ROW grant to the BLM for the construction and operation of a wind energy facility. Alternative B1 is presented as proposed in the ROW application and Applicants' Plan of Development (Figure 2.5-1). The BLM coordinated with the Applicants in the preparation of the Plan of Development and provided recommendations in design to address known resource concerns.

This section and Appendix 2B include information and excerpts from the Plan of Development to aid the reader in understanding the Applicants' proposal. Appendix 2B contains design features, best management practices, mitigation measures, and monitoring that would be applicable only to Alternatives B1 and B2a. They were taken from the Applicants' Plan of Development which includes the Applicants' Draft Greater Sage-Grouse Conservation Plan (Tetra Tech, Nov. 2010). Appendix 2B should not be confused with Appendix 2A which contains design features common to all action alternatives, including Alternative B1 and B2a. The Applicants' Plan of Development is available at the Idaho BLM Jarbidge Field Office, the Nevada BLM Wells Field Office or online at the BLM project web page at http.www.blm.gov/id/st/en/prog/planning/china_mountain_wind.html.

In addition to the ROW for the construction and operation of the wind energy facility, several other ancillary facilities would be authorized through separate ROW grants. These ancillary facilities include the interconnect transmission line, the interconnect substation, one inbound haul route, the northern O&M facility, a fiber optic service connection, and a power distribution line servicing the northern O&M facility.

2.5.1 PROJECT FEATURES

Project construction would disturb a total of 812 acres, including project features common to all (59 acres). Disturbance acres for project features that vary by alternative are summarized in Table 2.5-1 and discussed below.

Table 2.5-1. Summary of Alternative B1 Project Features that Vary by Alternative.

Project Features	Amount
Number of turbines	170
Project capacity	340 MW
Project roads total	83 miles
Reconstructed	21 miles
New	62 miles
Underground collection system	51 miles
Laydown yards	4

2.5.1.1 Turbines

Alternative B1 would consist of the construction and operation of up to 170 wind turbines that would provide 340 MW of electricity (Figure 2.5-1; Table 2.5-1). Construction of turbine pads and

associated turbine component laydown areas would result in up to 360 total acres of disturbance. Turbines would be sited on public (68%), IDL (9%), and private lands (23%).

2.5.1.2 Project Roads

Alternative B1 would include up to 21 miles of existing roads that would need to be reconstructed and an additional 62 miles of new road construction that would provide access to turbines and other project facilities. A total of up to 83 total miles (296 acres) of road reconstruction or new road construction would be required (Figure 2.5-1; Table 2.5-1). Roads would be sited on public (69%), IDL (8%), and private lands (23%).

2.5.1.3 Underground Collection System

Approximately 51 miles of underground collection trenches (Table 2.5-1) would be needed, resulting in up to 84 total acres of disturbance. The underground collection system would be sited on public (68%), IDL (9%), and private lands (23%).

2.5.1.4 Laydown Yards

Four laydown yards would be needed (Figure 2.5-1; Table 2.5-1), resulting in up to 16 total acres of disturbance. The configuration and use of the laydown yards would be as described in Section 2.4.2.8. Two laydown yards would be sited on public lands, one at the north end of the project area along Monument Springs Road, and one at the south end of the project area near the Idaho/Nevada state line. The two other laydown yards would be sited on IDL and private lands in the central portion of the project area.

2.5.2 DESIGN FEATURES SPECIFIC TO ALTERNATIVE B1

The Applicants, as part of their Plan of Development, proposed design features specifically for Alternative B1. These design features are included in Appendix 2B. If Alternative B1 is authorized these design features will be implemented as well as all design features and stipulations found in Appendix 2A.

2.5.3 PLAN AMENDMENTS TO THE 1987 JARBIDGE RMP

Alternative B1 is not entirely consistent with decisions from the 1987 Jarbidge RMP. Because Alternative B1 does not conform to the 1987 Jarbidge RMP, several amendments are proposed, as follows.

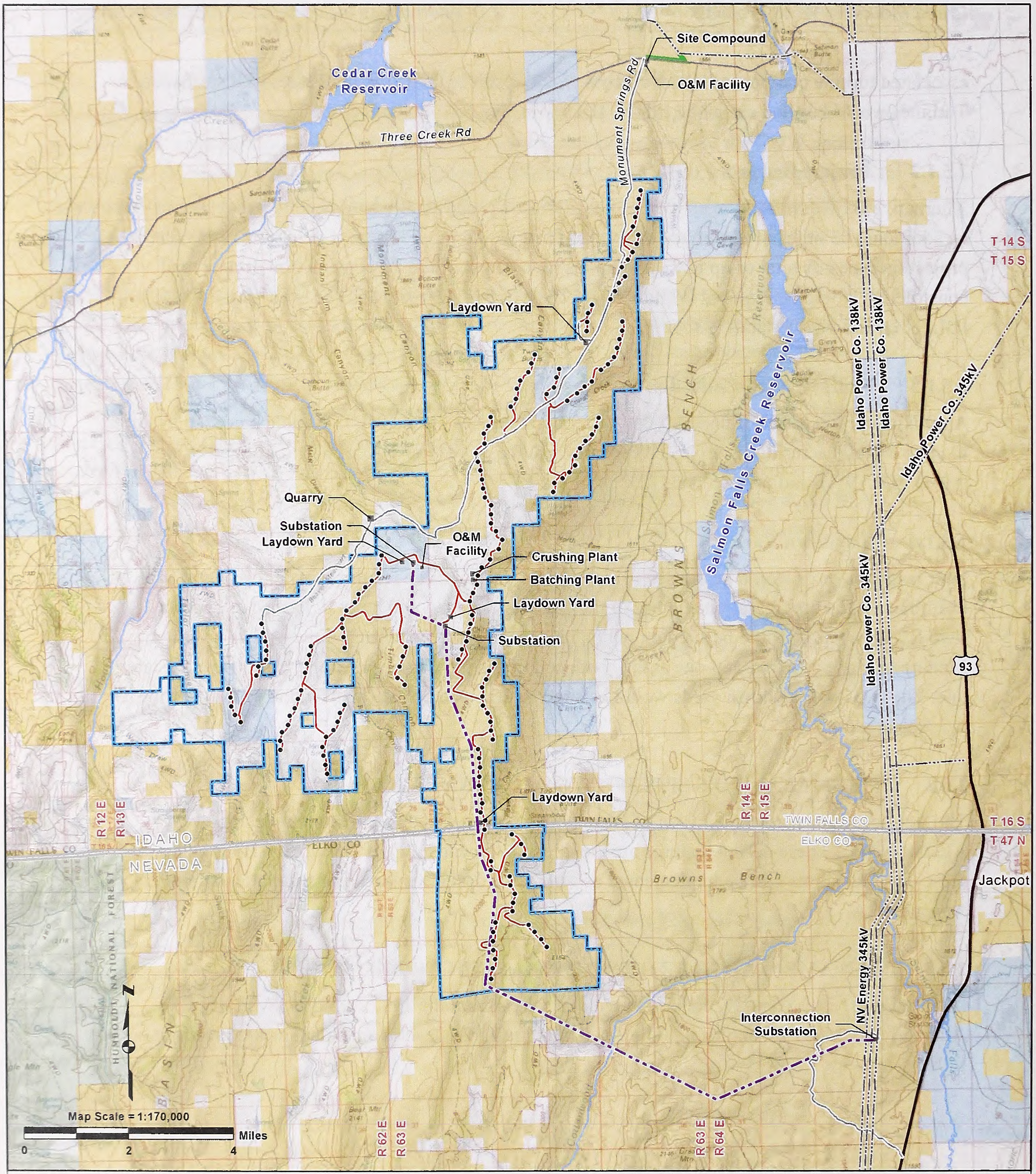

Figure 2.5-1. Alternative B1

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2.5.3.1 Visual Resource Management Classes

Under Alternative B1, 26 turbines are proposed within Visual Resource Management (VRM) Class II and 122 are proposed within VRM Class III. Objectives for VRM Class II areas would preclude siting wind turbines in these areas. A land use plan amendment is required to allow wind turbines to be sited in VRM Class II areas. Therefore, a plan amendment to change VRM Class II areas with wind turbines to VRM Class IV areas is proposed. Objectives for VRM Class III areas do not preclude siting wind turbines in these areas and a plan amendment is not required. However, a plan amendment to change VRM Class III areas to Class IV areas is included because objectives for VRM Class IV are better suited to wind energy development.

RMP language: "The visual or scenic values of the public lands will be considered whenever any physical actions are proposed on public lands. The degree of alterations to the natural landscape will be guided by the criteria established for the four Visual Resource Management Classes as outlined in BLM 8400. VRM Classes will be managed as shown on Map 9." (Page II-94, 1987 Jarbidge RMP).

Amendment: Where turbines are sited in VRM Class II or Class III areas, the VRM management classes as shown on Map 9 of the 1987 Jarbidge RMP would be changed to VRM Class IV (Figure 2.5-2).

2.5.3.2 Special Status Species and Crucial Wildlife Habitat

The Applicants are proposing to build the wind energy facility under Alternative B1 over a 2-year period. Given the type and duration of seasonal occupancy restrictions for wildlife and wildlife habitats in the 1987 Jarbidge RMP, constructing the project within a 2-year period is not possible unless these stipulations are removed or reduced through a plan amendment. The seasonal occupancy restrictions would also prevent emergency maintenance activities from occurring during certain times of the year. BLM has long interpreted the threatened, endangered, and sensitive plant and animal restrictions in the 1987 Jarbidge RMP as guidance, and not as strict requirements. In a recent court order (February 26, 2009, WWP v. Dyer et al. CV-04-181-S-BLW), the court found that BLM's interpretations related to protection measures for special status species was erroneous. In this case, BLM is proposing to modify or eliminate the seasonal occupancy restrictions that restrict major construction and maintenance work.

RMP language: "In crucial wildlife habitats (winter ranges, raptor nest sites, strutting grounds, fawning habitat, etc.), major construction and maintenance work will be scheduled to avoid or minimize disturbance to wildlife."

"Protect and enhance endangered, threatened and sensitive species habitats in order to maintain or enhance existing and potential populations within the planning area. Allow no adverse habitat alteration within 1/4 mile of any burrowing owl nest, 3/4 mile of any ferruginous hawk, golden eagle or prairie falcon nest, or within one mile of bighorn sheep habitat."

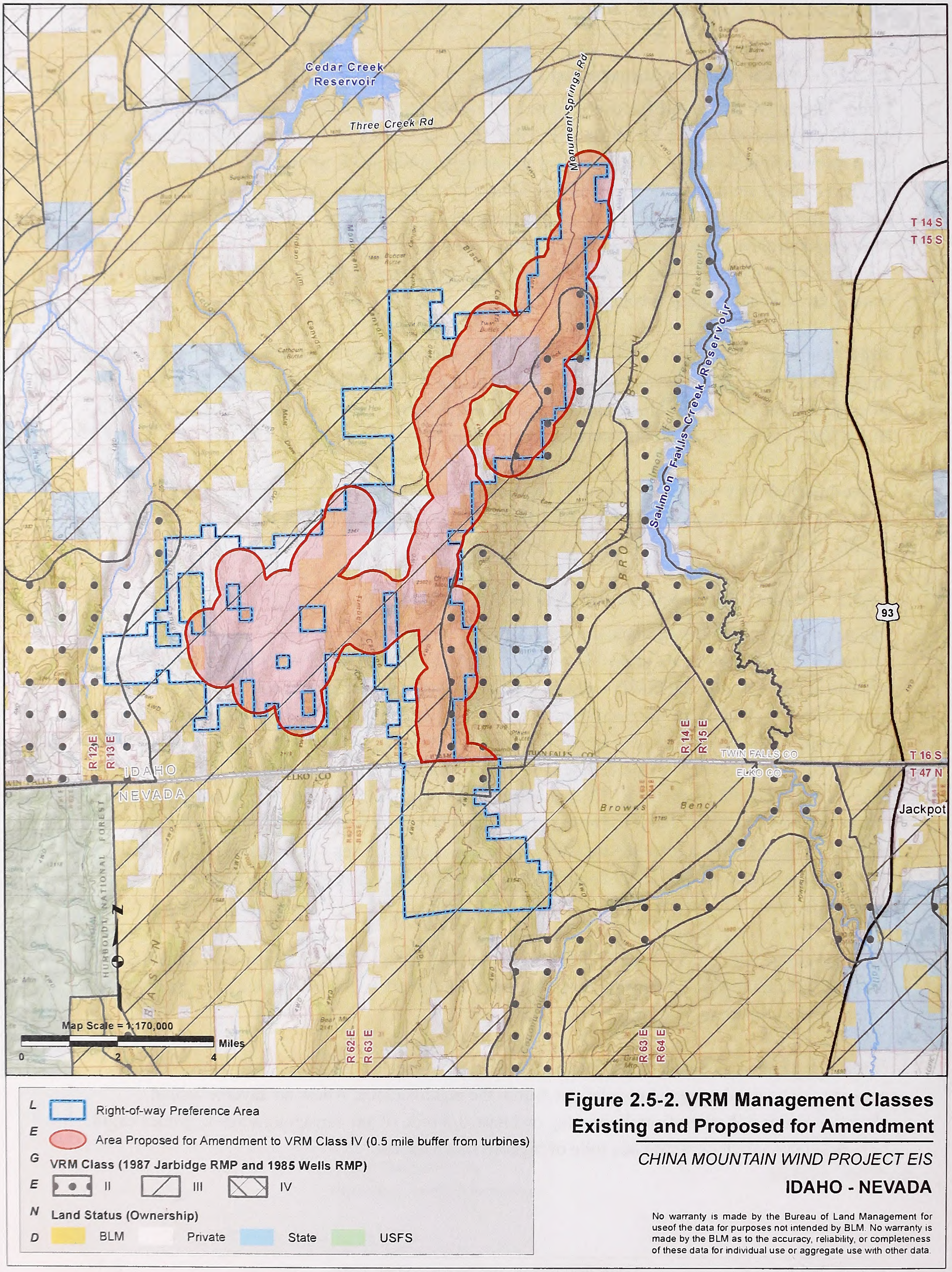

Figure 2.5-2. VRM Management Classes Existing and Proposed for Amendment

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"Occupancy restrictions shown on Table 1 will be followed." Table 1 (RMP, p. II-85) includes seasonal restrictions and spatial buffers for a variety of species.

Amendment: The seasonal restrictions and spatial buffers for wildlife contained in the 1987 Jarbidge RMP and identified above, would be removed for the project area and would no longer apply during construction, operation, and decommissioning of the project.

2.5.3.3 Special Habitats

The Jarbidge RMP restricts construction activities within 500 feet of special habitats (Jarbidge ROD Table 1, Wildlife Habitat Occupancy Restrictions p. II-86).

RMP language: No occupancy within 500 feet of reservoirs, ponds, lakes, streams, wetlands, marshes, and riparian areas year-round.

Amendment: A one-time exception to this stipulation would be granted to allow for construction of five turbines, a laydown yard, and the site compound and northern O&M facility within 500 feet of an intermittent stream.

2.5.4 MITIGATION

For Alternative B1 the Applicants have proposed the following measures in addition to those presented in Appendix 2B in order to reduce or compensate for certain impacts to sage-grouse and other wildlife. This information has been excerpted from the Applicants' *November 2010 Draft Sage-Grouse Conservation Plan for the China Mountain Wind Project* (Tetra Tech, 2010). The sage-grouse conservation plan is available at the Idaho BLM Jarbidge Field Office, the Nevada BLM Wells Field Office, or online at the BLM project web page at http.www.blm.gov/id/st/en/prog/planning/china_mountain_wind.html.

The conservation plan identifies commitments on behalf of the Applicants to protect and conserve sage-grouse habitat within the project footprint and for compensation of impacts through offsite compensatory mitigation. The purpose of the plan is to ensure that impacts to sage-grouse and their habitat are addressed through measures built into the project design, including avoidance and minimization, onsite restoration and offsite mitigation. Onsite restoration would include the reclamation and revegetation of areas temporarily disturbed during construction. Offsite mitigation would include actions designed to offset impacts by protecting or improving habitat quality outside of the project footprint area and would include the enhancement, restoration, and (possibly in the case of wet meadow habitat) creation of sage-grouse habitat. Each of these mitigation actions could be implemented on lands which are acquired outright, secured under a conservation easement, or subject to some other legal agreement allowing modifications to be made to existing land uses to achieve the desired improvements to sage-grouse habitat.

If the project is authorized, the Applicants would commit to a conservation fund not to exceed 16 million dollars over the life of the project ROW grant (30 years). This fund would provide for greater

sage-grouse research and monitoring, the costs associated with fee title acquisition of offsite mitigation parcels and/or establishment of offsite conservation easements, implementation of mitigation actions, and the establishment of a contingency mitigation fund. If the chosen mitigation parcels are on public lands, the Applicants would not be responsible for costs associated with acquisition or establishment of conservation easements of these parcels. They would still be responsible for costs associated with implementation of mitigation actions (e.g. the costs for management of livestock grazing, restoration activities, monitoring and reporting, and replanting).

2.5.5 MONITORING

The following monitoring of the project would occur under Alternative B1. The exact details, specific protocols, and schedule would be developed as a part of the ROW authorization for the project. Additional monitoring applicable to Alternative B1 is described in Appendix 2B.

2.5.5.1 Fish and Wildlife

Wind power projects have effects on wildlife, particularly avian species and bats, depending upon the location, geography, and natural setting of the project. Monitoring of the project is key to understanding the relationship between the project design, siting of the turbines, operation of the facility and effects on wildlife. These effects can occur in a variety of ways. Based on data collected at other wind energy facilities, the greatest impacts are from bird and bat collisions with the large blades that drive each of the wind turbines (referred to as the rotor swept area of each turbine). Additional long-term monitoring may also be necessary to determine how the characteristics of the project and its turbines affect the behavior and migration of birds and bats and to determine if there are certain turbines along the string that are contributing to bird and bat mortality that would trigger the need to implement management actions to reduce these effects.

The primary goals of monitoring windpower development are to evaluate risk to birds from development, as well as the cumulative risk to birds from all wind power development in the region. The secondary goal of monitoring is to provide information that can be used to reduce potential risks to birds that could result from subsequent developments (Strickland, Erickson, & McDonald, 1996). Wildlife monitoring methods for the proposed wind energy facility are presented below.

Fatality monitoring for birds and bats: The primary objective of this monitoring would be to estimate the annual number of avian and bat casualties attributable to collisions with wind turbines and meteorological towers. Methods for fatality monitoring at wind projects are well established and would likely follow one or more discussed in Arnett, Erickson, Kerns, & Horn (2005).

- Monitoring would consist of three components: (1) standardized carcass searches of selected turbines or turbine strings; (2) searcher efficiency trials to estimate the percentage of carcasses found by searchers; and (3) carcass removal trials to estimate the length of time that a carcass remains in the field for possible detection. A method for personnel at the wind facility to report incidental fatalities would also be developed.

- Typical post-construction fatality monitoring at wind energy projects extends for a period of 3 years. Because sage-grouse are long lived, the Applicants are considering monitoring for this species over a 5- to 7-year post-construction period as outlined in the *Draft Sage-Grouse Conservation Plan for the China Mountain Wind Project* (Tetra Tech 2010).

Sage-grouse lek monitoring: The objective of this monitoring would be to estimate lek attendance for sage-grouse following construction and during operation of the wind facility. These data would be compared to the existing data collected in the vicinity of the project site by WEST Inc., Idaho Department of Fish and Game, and Nevada Department of Wildlife to see if there is a change in attendance and attendance trends. Monitoring would be conducted using helicopter and ground surveys consistent with methodology used by WEST Inc. and Idaho Department of Fish and Game in the Browns Bench/China Mountain area.

Sage-grouse habitat use and movement monitoring: The objective of this monitoring would be to determine sage-grouse habitat selection, demographics, and movement patterns following the construction and operation of the wind facility. Monitoring would occur for a minimum of 3 years post construction. This monitoring would be accomplished by capturing sage-grouse, fitting them with radio transmitters, and tracking them over the 3-year monitoring period. These data would be compared to the existing data collected in the vicinity of the project site by WEST, Inc., IDFG, and NDOW to see if there is a change in habitat use, demographics, and movement patterns. This monitoring would help to:

- Determine if the project influences grouse distribution, habitat use, or population demographics.
- Determine the projects effects on seasonal movement patterns and connectivity of sage-grouse habitat use.
- Determine the projects effects on the selection of habitat by sage-grouse.
- Provide baseline data on sage-grouse use and population parameters that can be used in a long-term study of the effects of wind turbines on sage-grouse.

Golden eagle and other raptor nest monitoring: The objective of this monitoring would be to estimate nest attendance for golden eagles and other raptors following construction and during operation of the wind facility. These data would be compared to the baseline data collected by WEST Inc. in 2008 in the 2-mile buffer of the project site to see if there is a change in the number of active nests.

Sensitive Bird Species Point Count Transects: Point count transects would be completed to determine relative abundance of sensitive bird species within the project area. Results of the monitoring would be compared with pre-project baseline numbers (Young, Hallingstad, Poulton, & Bay, 2009) to determine if the construction and operation of the project results in a decrease in the relative abundance of sensitive bird species. Monitoring would occur for 3 years post construction.

2.5.5.2 Noxious Weeds and Invasive Plant Species Monitoring

The Applicants, as part of the ROW authorization, would prepare a noxious weeds and invasive plants management plan. A key element of this plan would be a detailed monitoring protocol that would allow for the early detection of noxious weeds or invasive plant species.

2.6 ALTERNATIVE B2A

Alternative B2a is a two-phased approach to the project. Phase I of the project would consist of constructing 100 turbines and 63 miles of road. Phase II would consist of constructing 70 turbines and 20 miles of road (Figure 2.6-1). Supporting infrastructure including substations, O&M facilities, laydown yards, and transmission lines and associated roads would all be constructed under Phase I of the project.

Short-term surface disturbance at the laydown yards, rock crusher, batch plant, and southern haul route staging area would be reclaimed following construction of Phase I. During construction of Phase II of the project, these areas would be redisturbed. Following construction of Phase II, the short-term surface disturbance at these areas would again be revegetated.

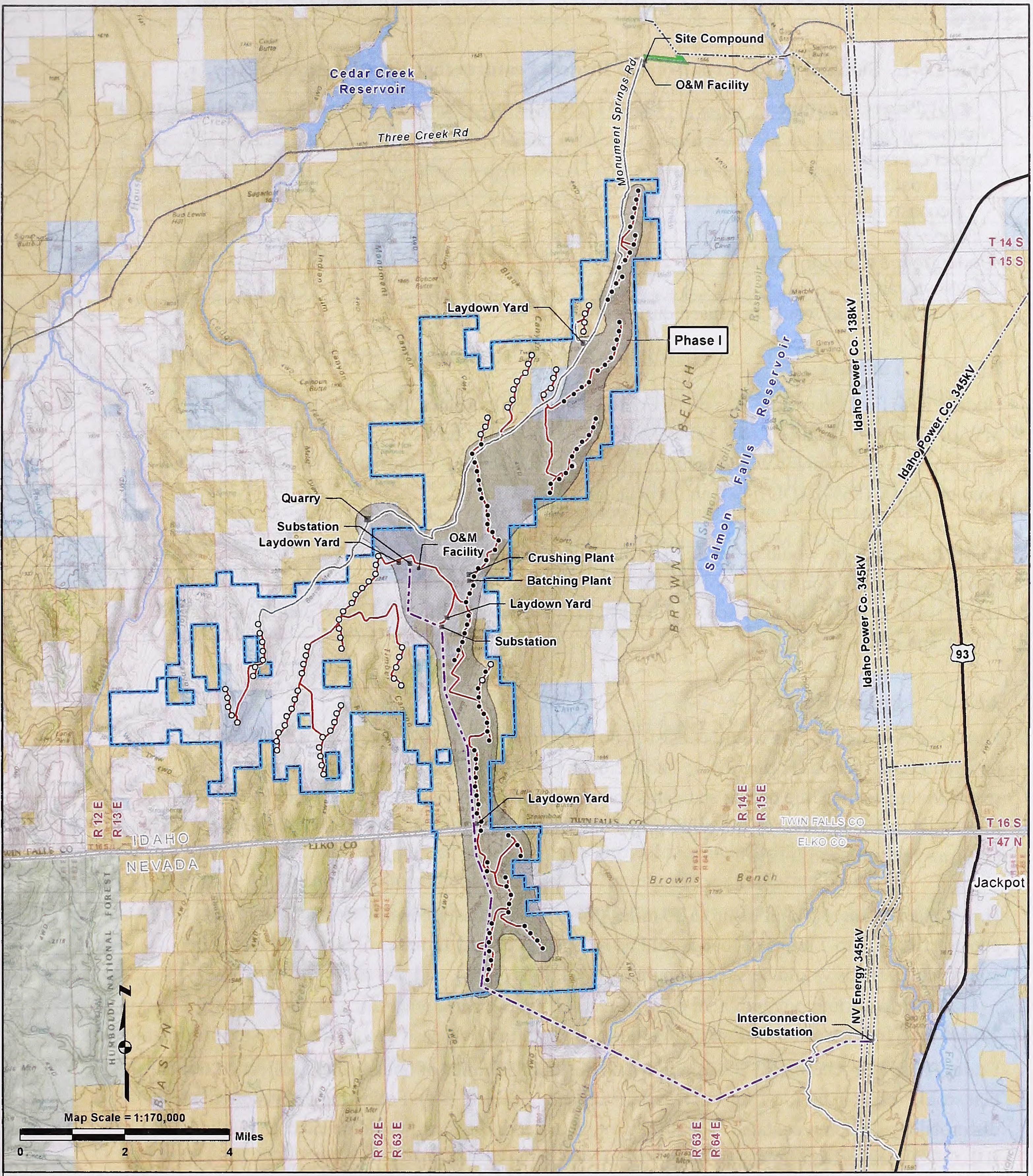
A phased approach to development would allow BLM to monitor the impacts of Phase I on wildlife prior to constructing the entire project. Phasing would allow BLM to monitor and confirm that impacts are as predicted in Chapter 4. Under this alternative, monitoring results would be used to determine whether unanticipated impacts occurred as a result of Phase I. If unanticipated impacts occur, BLM would conduct appropriate NEPA analysis and adjust requirements prior to issuing a notice to proceed to construct Phase II.

The impacts on wildlife (sage-grouse, birds, bats, and big game) from Phase I of the project would be monitored for a period of 7 years after the construction of Phase I. The 7-year monitoring period is based on the longevity of sage-grouse, which is 5 to 7 years. It is assumed that Phase II of Alternative B2a would be operational on year 10 of the overall ROW grant.

In addition to the ROW for the construction and operation of the wind energy facility, several other ancillary facilities would be authorized through separate ROW grants as described for Alternative B1.

2.6.1 PROJECT FEATURES

Project construction of both phases would disturb a total of 837 acres, including project features common to all (59 acres). Disturbance acres for project features that vary by alternative are summarized in Table 2.6-1 and discussed below. The transmission interconnect line road would be built under Phase I.



LEGEND

- Right-of-way Preference Area
- Phase I Boundary
- Phase I Turbine Location
- Phase II Turbine Location
- Proposed Transmission Line (345 kV)
- Existing Transmission Line
- Proposed New Road
- Existing Road - Reconstruction Proposed
- Undergound Distribution Line

Land Status (Ownership)

BLM · Private · State · USFS

Figure 2.6-1. Alternative B2a Phased Approach

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Table 2.6-1. Summary of Alternative B2a Project Features that Vary by Alternative.

Project Features	Phase I Amount	Phase II Amount	Total Amount
Number of turbines	100	70	170
Project capacity	200 MW	140 MW	340 MW
Project roads total	63 miles	20 miles	83 miles
Reconstructed	14 miles	7 miles	21 miles
New	49 miles	13 miles	62 miles
Underground collection system	35 miles	15 miles	51 miles
Laydown yard[1]	4	1	4

[1] One laydown yard would be reused during Phase II.

2.6.1.1 Turbines

Under Phase I of Alternative B2a there would be up to 100 turbines that would provide up to 200 MW of electricity (Figure 2.6-1; Table 2.6-1). Construction of turbine pads and associated turbine component laydown areas would result in up to 211 total acres of disturbance. Turbines would be sited on public (86%), IDL (3%), and private lands (11%).

Under Phase II there would be up to 70 turbines constructed. These turbines would produce up to 140 MW of electricity. Construction of turbine pads and associated turbine component laydown areas would result in up to 150 total acres of disturbance. Turbines would be sited on public (43%), IDL (17%), and private lands (40%).

2.6.1.2 Project Roads

Phase I of Alternative B2a would consist of up to 63 total miles (202 acres) of road reconstruction or new road construction (Figure 2.6-1; Table 2.6-1). Up to 14 miles of existing roads would be reconstructed to meet the design standards for roads, and 49 miles of new road would be constructed to provide access to turbines and other project facilities. Roads would be sited on public (81%), IDL (7%), and private lands (12%).

Under Phase II there would be up to 20 miles (94 acres) of road reconstruction and new road construction. Up to 7 miles of road would be reconstructed and 13 miles of new road would be constructed. Roads would be sited on public (44%), IDL (11%), and private lands (45%).

2.6.1.3 Underground Collection System

Under Phase I of Alternative B2a, there would be about 35 miles of underground collection trenches that would result in up to 51 total acres of disturbance (Table 2.6-1). Following construction, areas disturbed would be revegetated. The underground collection system would be sited on public (78%), IDL (10%), and private lands (12%).

Under Phase II, there would be about 15 miles of underground collection trenches that would result in up to 32 acres of disturbance. Following construction, disturbed areas would be revegetated. The underground collection system would be sited on public (37%), IDL (13%), and private lands (50%).

2.6.1.4 Laydown Yards

Laydown yards needed for construction of the project under Phase I (Figure 2.6-1; Table 2.6-1) would be the same as described under Alternative B1. Under Phase II a single laydown yard, also used during Phase I, would be needed, resulting in up to 4 total acres of repeated disturbance. This laydown yard would be sited on IDL land in the central portion of the project area.

2.6.2 DESIGN FEATURES SPECIFIC TO ALTERNATIVE B2A

Design features for Alternative B2a would be the same as described for Alternative B1.

2.6.3 PLAN AMENDMENTS TO THE 1987 JARBIDGE RMP

Plan amendments to the 1987 Jarbidge RMP would be the same as those described under Alternative B1 (Section 2.5.3). However, the area for which visual resource management classes would be amended would be different. Under Alternative B2a Phase I would site 24 turbines in Class II and 54 turbines in Class III. Phase II would site two turbines in Class II and 68 in Class III. As stated in Section 2.5.3.1 a land use plan amendment is required to allow wind turbines to be sited in VRM Class II areas. VRM Class II areas with wind turbines would be changed to VRM Class IV. Objectives for VRM Class III areas do not preclude siting wind turbines in these areas and a plan amendment is not required. However, a plan amendment to change VRM Class III areas to Class IV areas is proposed because objectives for VRM Class IV are better suited to wind energy development.

2.6.4 MITIGATION

Mitigation under Alternative B2a would be the same as proposed under Alternative B1.

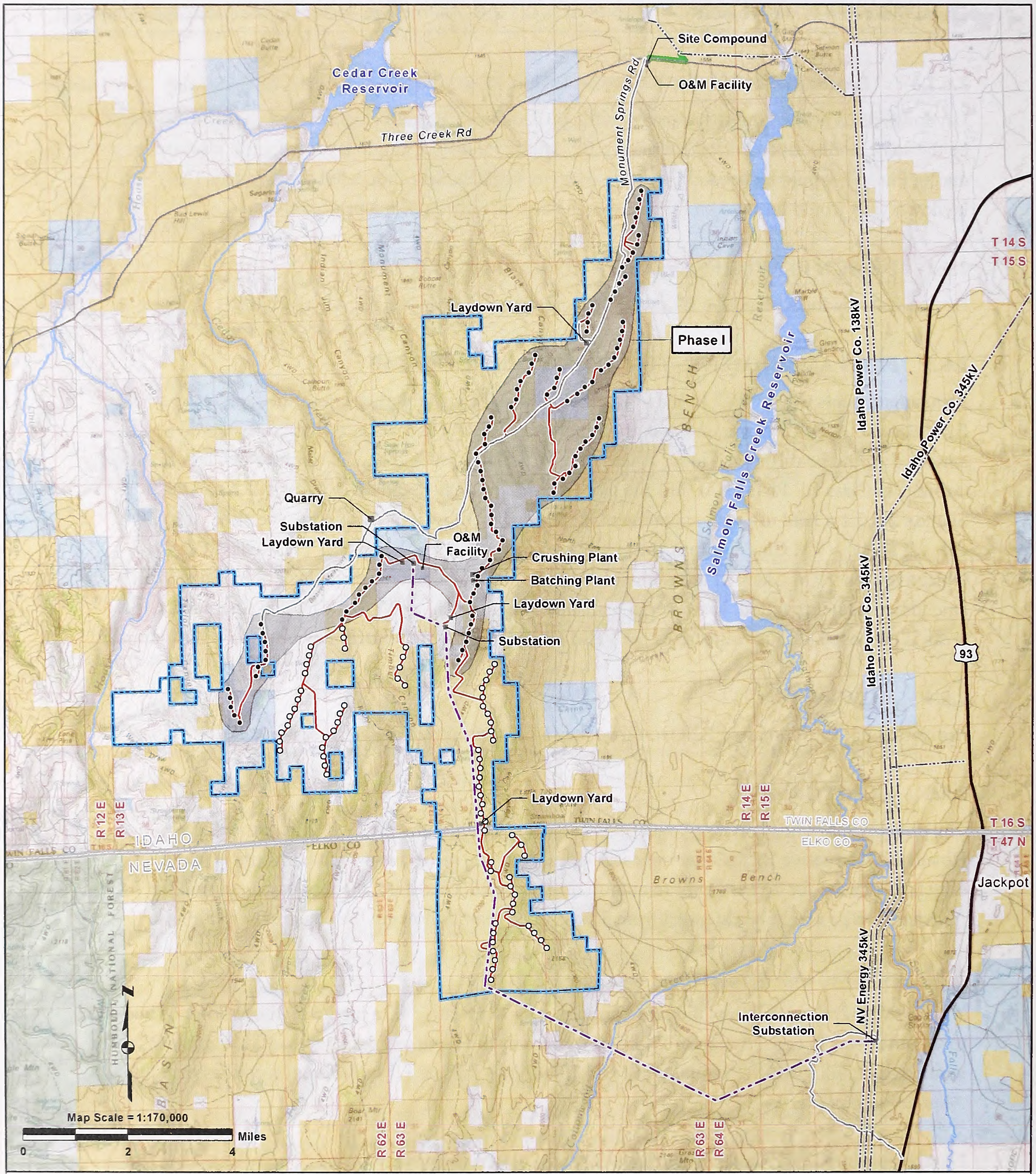
2.6.5 MONITORING

The project monitoring proposed under Alternative B1 would also apply to Alternative B2a. However, Alternative B2a is a two-phased approach to the project in which BLM plans to monitor effects of Phase I for 7 years prior to authorizing Phase II. Therefore, the monitoring period for Alternative B2a would be extended from 3 years to 7 years following the construction of Phase I.

2.7 ALTERNATIVE B2B

Alternative B2b would follow the same principles as Alternative B2a including monitoring of impacts to wildlife prior to construction of Phase II. It presents the same project layout as Alternative B2a, but would consist of 100 turbines in Phase I and 70 turbines in Phase II in different locations than Alternative B2a (Figure 2.7-1).

Descriptions presented under Alternative B2a of monitoring between phases, operational time frame for Phase II, supporting infrastructure that would be constructed under Phase I, are the same for Alternative B2b. Short-term surface disturbance at the laydown yards, rock crusher, batch plant, and southern haul route staging area would be reclaimed following construction of Phase I. During construction of Phase II of the project, these areas would be redisturbed. Following construction of Phase II, the short-term surface disturbance at these areas would again be reclaimed.



LEGEND

- Right-of-way Preference Area
- Phase I Turbine Location
- Proposed Transmission Line (345 kV)
- Proposed New Road
- Phase I Boundary
- Phase II Turbine Location
- Existing Transmission Line
- Existing Road - Reconstruction Proposed
- Underground Distribution Line

Land Status (Ownership)

BLM | Private | State | USFS

Figure 2.7-1. Alternative B2b Phased Approach

CHINA MOUNTAIN WIND PROJECT EIS

IDAHO - NEVADA

No warranty is made by the Bureau of Land Management for useof the data for purposes not intended by BLM. No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

In addition to the ROW for the construction and operation of the wind energy facility, several other ancillary facilities would be authorized through separate ROW grants as described for Alternative B1.

2.7.1 PROJECT FEATURES

Project construction of both phases would disturb a total of 836 acres, including project features common to all (59 acres). Disturbance acres for project features that vary by alternative are summarized in Table 2.7-1 and discussed below. The transmission interconnect line road would be built under Phase I.

Table 2.7-1. Summary of Alterative B2b Project Features that Vary by Alternative.

Project Features	Phase I Amount	Phase II Amount	Total Amount
Number of turbines	100	70	170
Project capacity	200 MW	140 MW	340 MW
Project roads total	62 miles	21 miles	83 miles
Reconstructed	21 miles	0	21 miles
New	41 miles	21 miles	62 miles
Underground collection system	29 miles	21 miles	51 miles
Laydown yard[1]	3	2	4

[1] During Phase II, the laydown yard located on lands managed by IDL would be reused.

2.7.1.1 Turbines

Under Phase I of Alternative B2b there would be up to 100 turbines that would provide up to 200 MW of electricity (Figure 2.7-1; Table 2.7-1). Construction of turbine pads and associated turbine component laydown areas would result in up to 212 total acres of disturbance. Turbines would be sited on public (67%), IDL (15%), and private lands (18%).

Under Phase II, up to 70 turbines would be constructed that provide up to 140 MW of electricity. Construction of turbine pads and associated turbine component laydown areas would result in up to 148 total acres of disturbance. Turbines would be sited on public (70%) and private lands (30%).

2.7.1.2 Project Roads

Under Phase I of Alternative B2b, there would be up to 62 total miles (192 acres) of road reconstruction and new road construction (Figure 2.7-1; Table 2.7-1). Up to 21 miles of existing roads would be reconstructed to meet the design standards for roads and 49 miles of new road would be constructed to provide access to turbines and other project facilities. Roads would be sited on public (66%), IDL (14%), and private lands (20%).

Under Phase II, there would be up to 21 miles (103 acres) of new road construction and no road reconstruction. Roads would be sited on public (71%) and private lands (29%).

2.7.1.3 Underground Collection System

Under Phase I, there would be about 29 miles of underground collection trenches that would result in up to 48 total acres of disturbance (Table 2.7-1). Following construction of the collection system, all areas disturbed would be revegetated. The underground collection system would be sited on public (60%), IDL (21%), and private lands (19%).

Under Phase II, there would be about 21 miles of underground collection trenches that would result in up to 36 total acres of disturbance. Following construction of the collection system, all areas disturbed would be revegetated. The underground collection system would be sited on public (69%) and private lands (31%).

2.7.1.4 Laydown Yards

For construction of Phase I of the project under Alternative B2b, three laydown yards would be needed (Figure 2.7-1; Table 2.7-1), resulting in up to 12 total acres of disturbance. The configuration and use of the laydown yards would be as described in Section 2.4.2.8. One laydown yard would be sited on public lands at the north end of the project area along Monument Springs Road; one would be sited on IDL lands, and one on private lands in the central portion of the project area.

Under Phase II of Alternative B2b, two laydown yards would be needed, resulting in up to 8 total acres of disturbance (4 acres each). One, which would also be used during Phase I, would be sited on IDL lands in the central portion of the project area and one would be sited on public lands at the south end of the project area near the Idaho/Nevada state line.

2.7.2 DESIGN FEATURES SPECIFIC TO ALTERNATIVE B2B

Design features for Alternative B2b are described in Section 2.4.5 and Appendix 2A.

2.7.3 PLAN AMENDMENTS TO 1987 JARBIDGE RMP

Alternative B2b is not entirely consistent with decisions contained in the 1987 Jarbidge RMP. Because Alternative B2b does not conform to the 1987 Jarbidge RMP, several amendments are proposed. The amendment proposed for special habitats is the same as that described under Alternative B1. The amendment language proposed for visual resource management classes is also the same as described under Alternative B1; however, the area for which visual resource management classes would be amended would be different. The amendment proposed for special status species and crucial wildlife habitat would differ as described below.

2.7.3.1 Visual Resource Management Classes

Alternative B2b Phase I would site 13 turbines in VRM Class II and 87 turbines in VRM Class III. Phase II would site 13 turbines in VRM Class II and 35 in VRM Class III. As stated in Section 2.5.3.1 a land use plan amendment is required to allow wind turbines to be sited in VRM Class II areas. VRM Class II areas with wind turbines would be changed to VRM Class IV. Objectives for VRM Class III areas do not preclude siting wind turbines in these areas and a plan amendment is not

required. However, a plan amendment to change VRM Class III areas to Class IV areas would be proposed because objectives for VRM Class IV are better suited to wind energy development. Amendment language would be the same as described under Alternative B1.

2.7.3.2 Special Status Species and Crucial Wildlife Habitat

Phase I of the wind energy facility would be constructed during a 2-year period. Phase II would be operational approximately 10 years after construction begins on Phase I and would be constructed during a 1-year period. Given the type and duration of seasonal occupancy restrictions for wildlife and wildlife habitats in the 1987 Jarbidge RMP, constructing Alternative B2b within a 2-year period is not possible unless these stipulations are removed or reduced through a plan amendment. This amendment would allow exceptions to the seasonal occupancy restrictions during construction and decommissioning. The seasonal occupancy restrictions would remain in place for emergency maintenance activities. BLM has long interpreted the threatened, endangered, and sensitive plant and animal restrictions in the 1987 Jarbidge RMP as guidance, and not as strict requirements. In a recent court order (February 26, 2009, WWP v. Dyer et al. CV-04-181-S-BLW), the court found that BLM's interpretations related to protection measures for special status species was erroneous. In this case, BLM is proposing to modify or eliminate the seasonal occupancy restrictions that restrict major construction work.

RMP language: "In crucial wildlife habitats (winter ranges, raptor nest sites, strutting grounds, fawning habitat, etc.), major construction and maintenance work will be scheduled to avoid or minimize disturbance to wildlife."

"Protect and enhance endangered, threatened and sensitive species habitats in order to maintain or enhance existing and potential populations within the planning area. Allow no adverse habitat alteration within 1/4 mile of any burrowing owl nest, 3/4 mile of any ferruginous hawk, golden eagle or prairie falcon nest, or within one mile of bighorn sheep habitat."

"Occupancy restrictions shown on Table 1 will be followed." Table 1 (Jarbidge RMP, p. II-85) includes seasonal restrictions and spatial buffers for a variety of species.

Amendment: Exceptions to the seasonal restrictions and spatial buffers for wildlife contained in the 1987 Jarbidge RMP and identified above would be granted during construction and decommissioning of the project.

Exception: Seasonal and spatial restrictions may be altered during construction and decommissioning considering the following conditions.

Big Game:

- Surveys would be conducted, through coordination with the BLM staff biologist, to determine the occupancy and condition of big game in their winter range.
- Factors to consider when granting exceptions to seasonal restrictions on winter ranges would include (1) animal presence or absence, (2) animal condition, (3) weather severity, (4) habitat condition and availability, (5) site location, and (6) timing of activities.

Sage-grouse and Sharp-tailed grouse:

- Exceptions may be granted for the timing limitation around lek sites for construction activities involving only infrequent short-term disturbance (less than 1 hour within a 24-hour period in a specific area); or
- If there are intervening topographic features or line-of-sight screening that buffer the lek or nesting habitat from disturbance; or
- If recent (within the last 5 years) site-specific studies or local expertise suggests that nesting hens are unlikely to be present within 4 miles of the project activity (may be based on presence of grouse on leks within this 4-mile buffered area).
- Exceptions may be granted for the winter range restriction if preconstruction surveys indicate the absence of wintering grouse in proximity to proposed activities.

Raptors:

- Preconstruction and pre-maintenance surveys would be conducted for raptors.
- Surveys show that the raptor nest has been destroyed (e.g., by wind, wildfire, lightning), or is not currently active (i.e., young have fledged or if the nest is unused in the current nesting season).
- Exceptions or temporal deviations from the established seasonal and spatial nest buffers may also be granted based on species, variations in nesting chronology of particular species locally, topographic considerations (e.g., intervening ridge between construction activities and a nest), or other factors that are biologically reasonable.

Redband Trout:

- Construction may occur within 500 feet of redband trout-bearing streams and tributaries when the channels are dry.
- All erosion control design features would be followed during construction in this buffer.

2.7.4 MITIGATION

On-site measures to reduce impacts to sage-grouse have been incorporated into Alternative B2b as design features, as described in Section 2.4.5 and Appendix 2A, and include but are not limited to, restrictions on timing of routine and major maintenance, installation of perch deterrents on

meteorological towers and power line structures, and reseeding disturbed areas. Therefore, no mitigation specific to Alternative B2b is being proposed.

2.7.5 MONITORING

Monitoring under Alternative B2b would be the same as proposed under Alternative B2a with the exception that monitoring listed in Appendix 2B would not apply.

2.8 ALTERNATIVE B2C

Alternative B2c would follow the same principles as Alternative B2b and B2a including monitoring of impacts to wildlife prior to construction of Phase II, but presents a different layout for the Phase I and Phase II portions of the project (Figure 2.8-1).

Descriptions presented under Alternative B2a of the monitoring period between phases, operational time frame for Phase II, and supporting infrastructure that would be constructed under Phase I and Phase II of the project are the same for Alternative B2c. Short-term surface disturbance at the laydown yards, rock crusher, batch plant, and southern haul route staging area would be reclaimed following construction of Phase I. During construction of Phase II of the project, these areas would be redisturbed. Following construction of Phase II, the short-term surface disturbance at these areas would again be revegetated.

In addition to the ROW for the construction and operation of the wind energy facility, several other ancillary facilities would be authorized through separate ROW grants as described for Alternative B1.

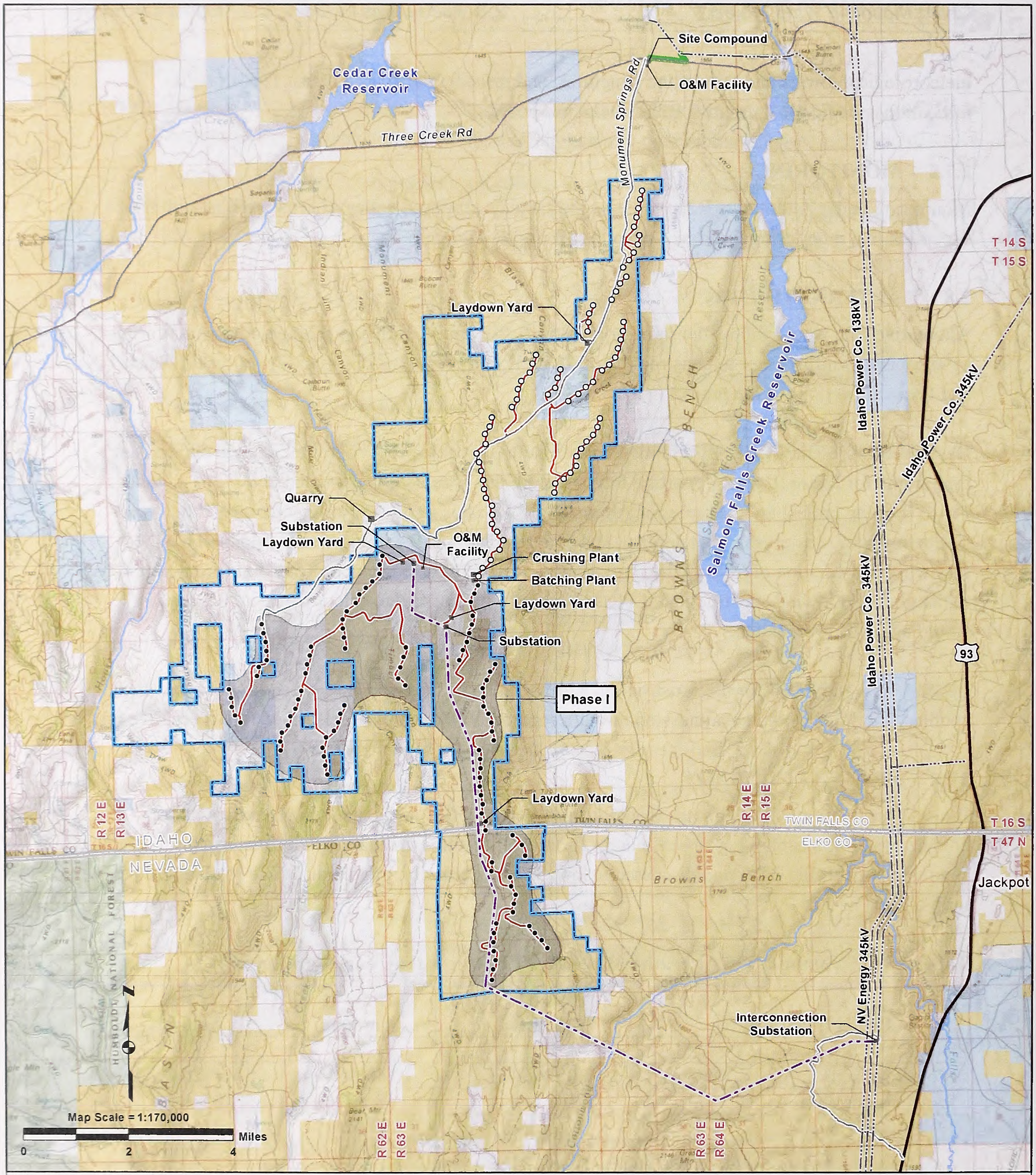
2.8.1 PROJECT FEATURES

Project construction of both phases would disturb a total of 831 acres, including project features common to all (59 acres). Disturbance acres for project features that vary by alternative are summarized in Table 2.8-1 and discussed below. The transmission interconnect line road would be built under Phase I.

Table 2.8-1. Summary of Alterative B2c Project Features that Vary by Alternative.

Project Features	Phase I Amount	Phase II Amount	Total Amount
Number of turbines	100	70	170
Project capacity	200 MW	140 MW	340 MW
Project roads total	70 miles	13 miles	83 miles
Reconstructed	20 miles	1 miles	21 miles
New	50 miles	12 miles	62 miles
Underground collection system	30 miles	21 miles	51 Miles
Laydown yard [1]	3	2	4

[1] A total of four laydown yards would be used. The laydown yard on IDL lands used during Phase I would be reused during Phase II.



LEGEND

- Right-of-way Preference Area
- Phase I Boundary
- Phase I Turbine Location
- Phase II Turbine Location
- Proposed Transmission Line (345 kV)
- Existing Transmission Line
- Proposed New Road
- Existing Road - Reconstruction Proposed
- Underground Distribution Line

Land Status (Ownership)

BLM Private State USFS

Figure 2.8-1. Alternative B2c Phased Approach

CHINA MOUNTAIN WIND PROJECT EIS

IDAHO - NEVADA

No warranty is made by the Bureau of Land Management for useof the data for purposes not intended by BLM. No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

2.8.1.1 Turbines

Under Phase I of Alternative B2c there would be up to 100 turbines that would provide up to 200 MW of electricity (Figure 2.8-1; Table 2.8-1). Construction of turbine pads and associated turbine component laydown areas would result in up to 212 total acres of disturbance. Turbines would be sited on public (60%), IDL (8%), and private lands (32%).

Under Phase II, there would be up to 70 turbines that would provide up to 140 MW of electricity. Construction of turbine pads and associated turbine component laydown areas would result in up to 149 total acres of disturbance. Turbines would be sited on public (80%), IDL (10%), and private lands (10%).

2.8.1.2 Project Roads

Under Phase I of Alternative B2c, there would be up to 70 total miles (234 acres) of road reconstruction or new road construction (Figure 2.8-1; Table 2.8-1). Up to 20 miles of existing roads would need to be reconstructed and 50 miles of new road would be constructed to provide access to turbines and other project facilities. Roads would be sited on public (62%), IDL (8%), and private lands (30%).

Under Phase II, there would be up to 13 miles (60 acres) of road reconstruction (1 mile) and new road construction (12 miles). Roads would be sited on public (84%) and IDL lands (16%). No new roads would be constructed on private lands during Phase II.

2.8.1.3 Underground Collection System

Under Phase I of Alternative B2c, there would be about 30 miles of underground collection trenches (Table 2.8.1) that would result in up to 50 acres of disturbance. Following construction of the collection system, all areas disturbed would be revegetated. The underground collection system would be sited on public (56%), IDL (8%), and private lands (36%).

Under Phase II, there would be about 21 miles of underground collection trenches that would result in up to 35 acres of disturbance. Following construction, disturbed areas would be revegetated. The underground collection system would be sited on public (74%), IDL (17%), and private lands (9%).

2.8.1.4 Laydown Yards

For construction of Phase I of Alternative B2c, three laydown yards would be needed (Figure 2.8-1; Table 2.8-1), resulting in up to 12 total acres of disturbance. The configuration and use of the laydown yards would be as described in Section 2.4.2.8. One laydown yard would be sited on public lands at the south end of the project area near the Idaho/Nevada state line. The other two laydown yards would be sited on IDL and private lands in the central portion of the project area.

Under Phase II, two laydown yards would be needed, resulting in up to 8 total acres of disturbance (4 acres each). The laydown yard on IDL lands used during Phase I would be reused during Phase II. One new laydown yard would be sited on public lands at the north end of the project area along Monument Springs Road.

2.8.2 DESIGN FEATURES SPECIFIC TO ALTERNATIVE B2C

Design features for Alternative B2C are described in Section 2.4.5 and Appendix 2A.

2.8.3 PLAN AMENDMENTS TO THE 1987 JARBIDGE RMP

Plan amendments to the 1987 Jarbidge RMP would be the same as those described under Alternative B2b (Section 2.7.3). However, the area for which visual resources management classes would be amended would be different. Alternative B2c Phase I would site 13 turbines in VRM Class II and 65 turbines in VRM Class III. Phase II would site 13 turbines in VRM Class II and 57 in VRM Class III. As stated in Section 2.5.3.1 a land use plan amendment is required to allow wind turbines to be sited in VRM Class II areas. VRM Class II areas with wind turbines would be changed to VRM Class IV. Objectives for VRM Class III areas do not preclude siting wind turbines in these areas and a plan amendment is not required. However, a plan amendment to change VRM Class III areas to Class IV areas is also proposed because objectives for VRM Class IV are better suited to wind energy development.

2.8.4 MITIGATION

No mitigation specific to Alternative B2c has been proposed.

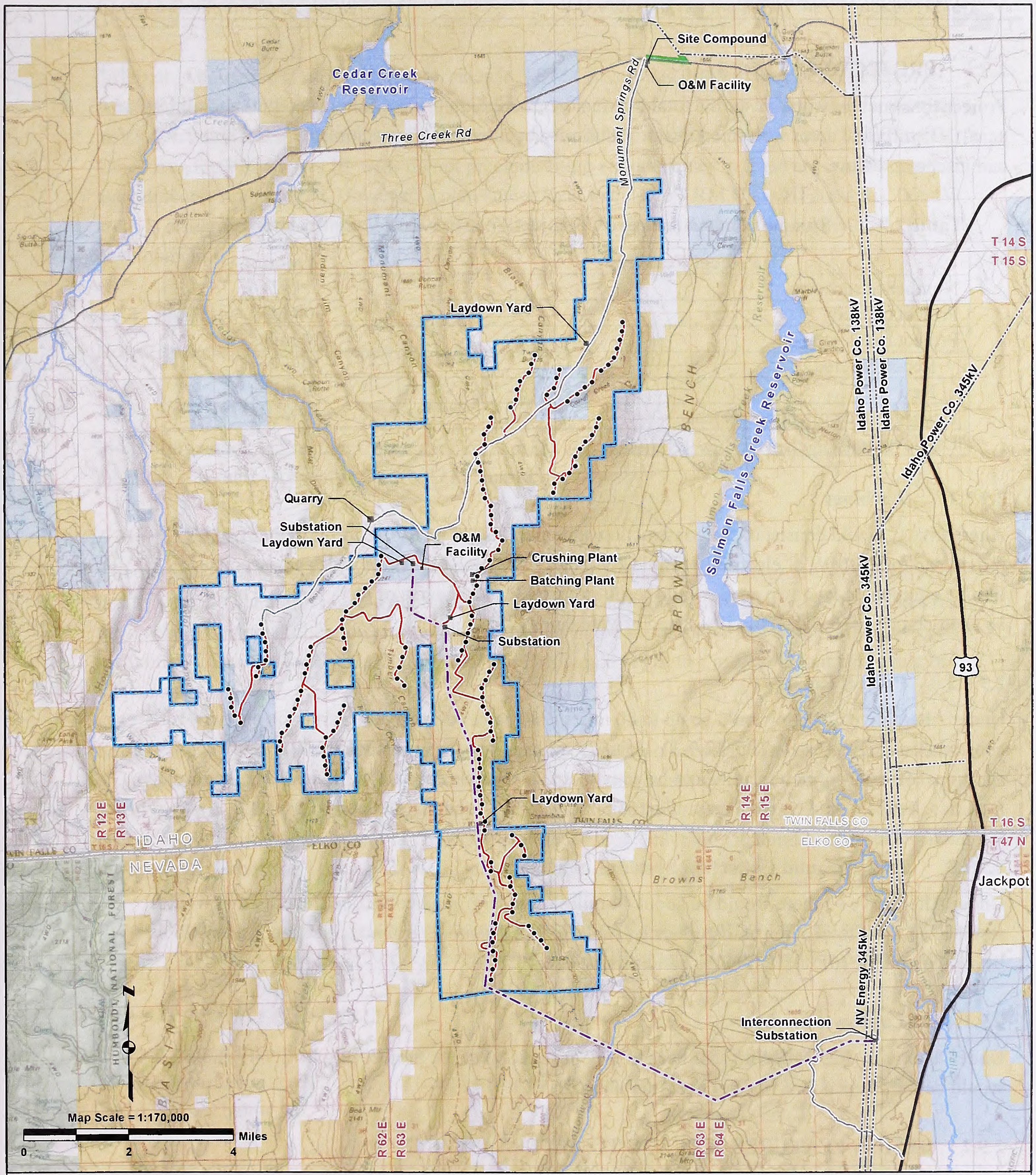
2.8.5 MONITORING

Monitoring would be the same as proposed under Alternative B2a with the exception that monitoring listed in Appendix 2B would not apply.

2.9 ALTERNATIVE C

Alternative C was developed to address some of the wildlife and visual resource issues in the northern portion of the project area. The project layout under Alternative B1 was modified under Alternative C by siting all wind turbines at a distance of 2 miles or greater from occupied sage-grouse leks (Figure 2.9-1). Alternative C also differs from Alternative B1 by eliminating turbines at the north end of the project area near a documented high use bat area and bat roost site and eliminating turbines in big game crucial winter range. Alternative C also eliminates the turbines that would be most visible from the BLM Lud Drexler Park campground and other park areas. This resulted in a layout consisting of 152 turbines.

In addition to the ROW for the construction and operation of the wind energy facility, several other ancillary facilities would be authorized through separate ROW grants as described for Alternative B1.



LEGEND

- Right-of-way Preference Area
- Turbine Location
- Proposed Transmission Line (345 kV)
- Proposed New Road
- Undergound Distribution Line
- Existing Transmission Line
- Existing Road - Reconstruction Proposed

Land Status (Ownership)

BLM | Private | State | USFS

Figure 2.9-1. Alternative C

CHINA MOUNTAIN WIND PROJECT EIS

IDAHO - NEVADA

2.9.1 PROJECT FEATURES

Project construction would disturb a total of 745 acres, including project features common to all (59 acres). Disturbance acres for project features that vary by alternative are summarized in Table 2.9-1 and discussed below.

Table 2.9-1. Summary of Alternative C Project Features that Vary by Alternative.

Project Features	Amount
Number of turbines	152
Project capacity	304 MW
Project roads total	80 miles
Reconstructed	20 miles
New	59 miles
Underground collection system	44 miles
Laydown yard	4

2.9.1.1 Turbines

Alternative C would consist of the construction and operation of up to 152 turbines that would provide up to 304 MW of electricity (Table 2.9-1). Construction of turbine pads and associated turbine component laydown areas would result in up to 322 total acres of disturbance. Turbines would be sited on public (65%), IDL (10%), and private lands (25%).

2.9.1.2 Project Roads

Under Alternative C, there would be up to 80 miles (280 acres) of road reconstruction and new road construction (Figure 2.9-1; Table 2.9-1). Up to 20 miles of existing roads would be reconstructed. An additional 59 miles of new road would be constructed to provide access to turbines and other project facilities. Roads would be sited on public (65%), IDL (10%), and private lands (25%).

2.9.1.3 Underground Collection System

Under Alternative C, there would be about 44 miles of underground collection trenches that would result in up to 72 total acres of disturbance (Table 2.9-1). The underground collection system would be sited on public (61%), IDL (11%), and private lands (28%).

2.9.1.4 Laydown Yards

Under Alternative C, laydown yards needed for construction of the project (Figure 2.9-1; Table 2.9-1) would be the same as described under Alternative B1.

2.9.2 DESIGN FEATURES SPECIFIC TO ALTERNATIVE C

Design features for Alternative C are described in Section 2.4.5 and Appendix 2A.

2.9.3 PLAN AMENDMENTS TO THE 1987 JARBIDGE RMP

Plan amendments to the 1987 Jarbidge RMP would be the same as those described under Alternative B2b. However, the area for which visual resource management classes would be amended would be

different. Alternative C would site 36 turbines in VRM Class II and 104 turbines in VRM Class III. As stated in Section 2.5.3.1 a land use plan amendment is required to allow wind turbines to be sited in VRM Class II areas. VRM Class II areas with wind turbines would be changed to VRM Class IV. Objectives for VRM Class III areas do not preclude siting wind turbines in these areas and a plan amendment is not required. However, a plan amendment to change VRM Class III areas to Class IV areas is also proposed because objectives for VRM Class IV are better suited to wind energy development.

2.9.4 MITIGATION

No mitigation specific to Alternative C is being proposed.

2.9.5 MONITORING

Monitoring under Alternative C would be the same as Alternative B1 with the exception that monitoring listed in Appendix 2B would not apply.

2.10 ALTERNATIVE D

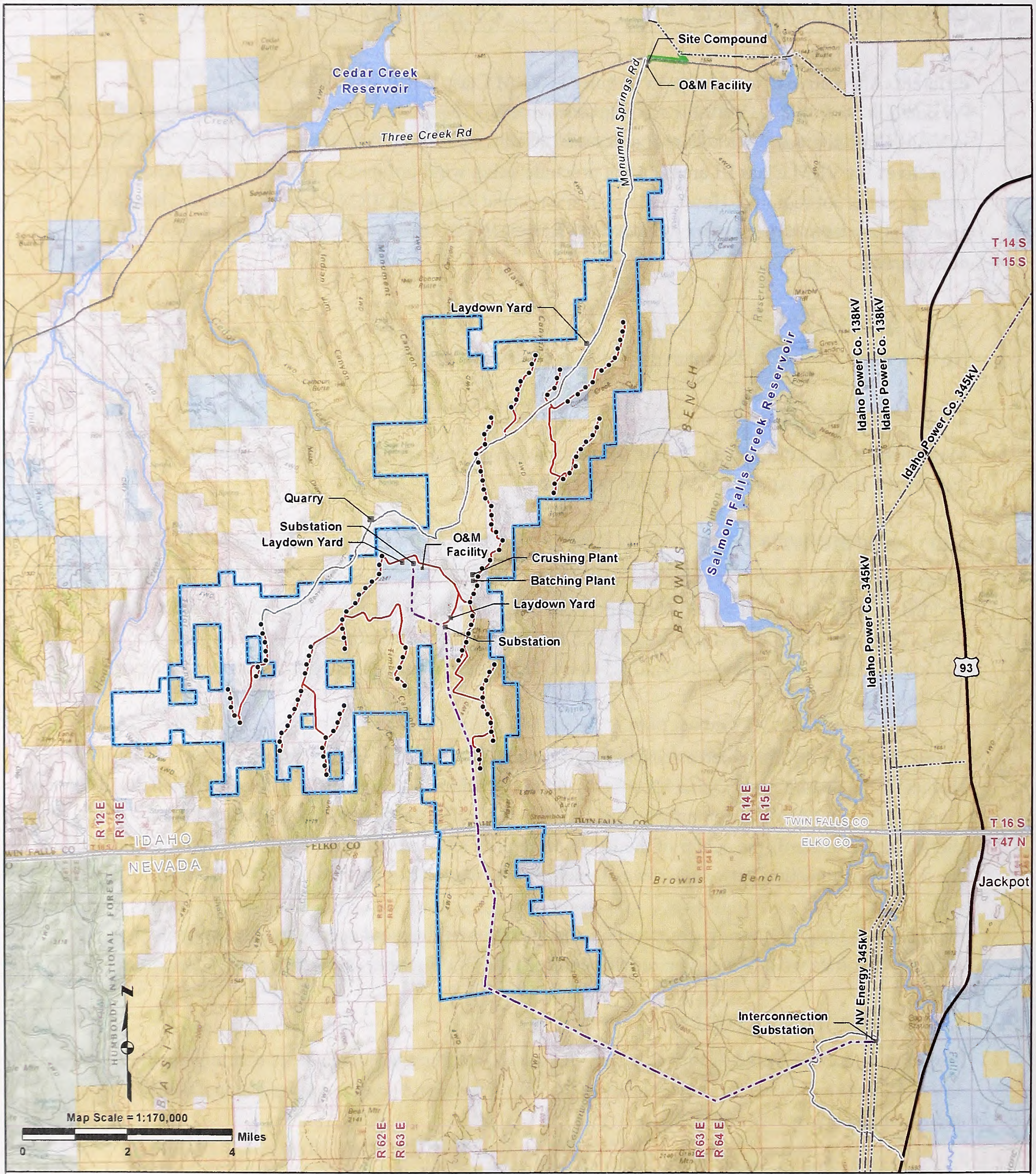
Alternative D was developed to reduce some of the potential impacts on sage-grouse movement through the project area. It would eliminate from the proposed Alternative B1 layout 18 turbines from the northern portion of the project area and 28 turbines in the southern portion of the project area, including all turbines in Nevada (Figure 2.10-1). This would result in a project layout consisting of 124 turbines.

Several studies have illustrated a seasonal sage-grouse connection between Browns Bench, northern Nevada to the southwest of China Mountain, and the Shoshone Basin to the northeast (Connelly, Musil, & Cross, 2009; Klott, Smith, & Vullo, 1993). This alternative would aggregate the wind energy facility towards the center of the ROW preference area, reducing the number of turbines along the seasonal connection between Browns Bench and northern Nevada.

In addition to the ROW for the construction and operation of the wind energy facility, several other ancillary facilities would be authorized through separate ROW grants as described for Alternative B1.

2.10.1 PROJECT FEATURES

Project construction would disturb a total of 631 acres, including project features common to all (59 acres). Disturbance acres for project features that vary by alternative are summarized in Table 2.10-1 and discussed below.



LEGEND

Right-of-way Preference Area			
Turbine Location		Underground Distribution Line	
Proposed Transmission Line (345 kV)		Existing Transmission Line	
Proposed New Road		Existing Road - Reconstruction Proposed	

Land Status (Ownership)

BLM | Private | State | USFS

Figure 2.10-1. Alternative D

CHINA MOUNTAIN WIND PROJECT EIS

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Table 2.10-1. Summary of Alternative D Project Features that Vary by Alternative.

Project Features	Amount
Number of turbines	124
Project capacity	248 MW
Project roads total	71 miles
Reconstructed	20 miles
New	51 miles
Underground collection system	36 miles
Laydown yard	3

2.10.1.1 Turbines

Alternative D consists of the construction and operation of up to 124 turbines that would provide up to 248 MW of electricity (Figure 2.10-1; Table 2.10-1). Construction of turbine pads and associated turbine component laydown areas would result in up to 263 total acres of disturbance. Turbines would be sited on public (55%), IDL (12%), and private lands (33%).

2.10.1.2 Project Roads

Under Alternative D there would be up to 72 miles (240 acres) of road reconstruction or new road construction (Figure 2.10-1; Table 2.10-1). Up to 20 miles of existing roads would be reconstructed. An additional 51 miles of new road would be constructed to provide access to turbines and other project facilities. Roads would be sited on public (62%), IDL (11%), and private lands (27%).

2.10.1.3 Underground Collection System

Alternative D includes about 36 miles of underground collection trenches that would result in up to 59 total acres of disturbance (Table 2.10-1). The underground collection system would be sited on public (53%), IDL (14%), and private lands (33%).

2.10.1.4 Laydown Yards

For construction of the project under Alternative D, three laydown yards would be needed (Figure 2.10-1; Table 2.10-1), resulting in up to 12 total acres of disturbance. The configuration and use of the laydown yards would be as described in Section 2.4.2.8. One laydown yard would be sited on public lands at the north end of the project area along Monument Springs Road. The other two laydown yards would be sited on IDL, and private land in the central portion of the project area.

2.10.2 DESIGN FEATURES SPECIFIC TO ALTERNATIVE D

Design features for Alternative D are described in Section 2.4.5 and Appendix 2A.

2.10.3 PLAN AMENDMENTS TO THE 1987 JARBIDGE RMP

Plan amendments to the 1987 Jarbidge RMP would be the same as those described under Alternative B2b. However, the area for which visual resource management classes would be amended would be different. Alternative D would site 23 turbines in VRM Class II and 101 turbines in VRM Class III. As stated in Section 2.5.3.1 a land use plan amendment is required to allow wind turbines to be sited

in VRM Class II areas. VRM Class II areas with wind turbines would be changed to VRM Class IV. Objectives for VRM Class III areas do not preclude siting wind turbines in these areas and a plan amendment is not required. However, a plan amendment to change VRM Class III areas to VRM Class IV areas is also proposed because objectives for VRM Class IV are better suited to wind energy development.

2.10.4 MITIGATION

No mitigation specific to Alternative D is being proposed.

2.10.5 MONITORING

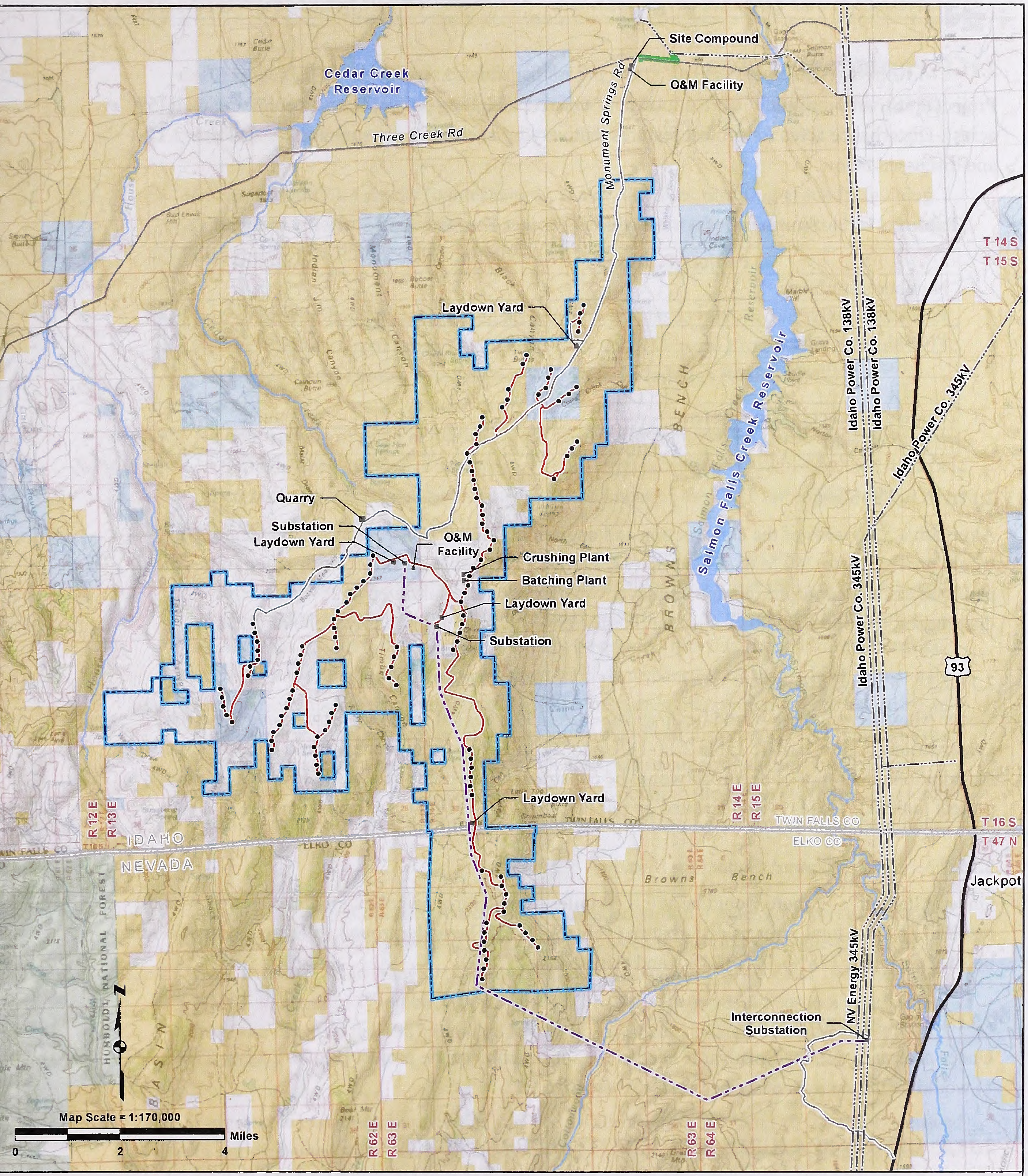
Monitoring under Alternative D would be the same as Alternative B1 with the exception that monitoring listed in Appendix 2B would not apply.

2.11 ALTERNATIVE E

Alternative E would conform to all management decisions presented in the 1987 Jarbidge RMP as amended and 1985 Wells RMP as amended.

Alternative E would eliminate 31 turbines located in the BLM VRM Class II management areas as well as 19 turbines in fish and wildlife habitat areas that are proposed under Alternative B1 (Figure 2.11-1). This would result in a project layout consisting of 120 turbines. It also would shift the northern O&M facility, site compound, northern laydown yard, and a small portion of the transmission line in Idaho and associated road slightly to the west so that these features would be greater than 500 feet from stream channels. Under Alternative E, the construction of the project would take up to 4 years to complete because of seasonal restrictions for wildlife. Timing restrictions in the 1987 Jarbidge RMP and the 1985 Wells RMP would limit construction of the project to a shortened time period that would start on July 1 and end on November 30 of any given year. Timing restrictions would be site-and species-specific. Based on preconstruction surveys, if species are not present then construction activities may proceed with approval of the BLM authorized officer.

In addition to the ROW for the construction and operation of the wind energy facility, several other ancillary facilities would be authorized through separate ROW grants as described for Alternative B1.



LEGEND

Right-of-way Preference Area
Turbine Location
Proposed Transmission Line (345 kV)
Proposed New Road
Underground Distribution Line
Existing Transmission Line
Existing Road - Reconstruction Proposed

Land Status (Ownership)

BLM | Private | State | USFS

Figure 2.11-1. Alternative E

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No warranty is made by the Bureau of Land Management for useof the data for purposes not intended by BLM. No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

2.11.1 PROJECT FEATURES

Project construction would disturb a total of 656 acres, including project features common to all (59 acres). Disturbance acres for project features that vary by alternative are summarized in Table 2.11-1 and discussed below.

Table 2.11-1. Summary of Alternative E Project Features that Vary by Alternative.

Project Features	Amount
Number of turbines	120
Project capacity	240 MW
Project roads total	76 miles
Reconstructed	21miles
New	55 miles
Underground collection system	42 miles
Laydown yard	4

2.11.1.1 Turbines

Alternative E consists of the construction and operation of up to 120 wind turbine generators that would provide up to 240 MW of electricity (Figure 2.11-1; Table 2.11-1). Construction of turbine pads and associated turbine component laydown areas would result in up to 254 total acres of disturbance. Turbines would be sited on public (55%), IDL (13%), and private lands (32%).

2.11.1.2 Project Roads

Under Alternative E there would be up to 76 miles (259 acres) of road reconstruction or new road construction (Figure 2.11-1; Table 2.11-1). Up to 21 miles of existing roads would be reconstructed. An additional 55 miles of new road would be constructed to provide access to turbines and other project facilities. Roads would be sited on public (65%), IDL (10%), and private lands (25%).

2.11.1.3 Underground Collection System

Under Alternative E, there would be about 42 miles of underground collection trenches that would result in up to 71 total acres of disturbance (Table 2.11-1). The underground collection system would be sited on public (58%), IDL (14%), and private lands (28%).

2.11.1.4 Laydown Yards

Under Alternative E, laydown yards needed for construction of the project (Figure 2.11-1; Table 2.11-1) would be the same as described under Alternative B1.

2.11.2 DESIGN FEATURES SPECIFIC TO ALTERNATIVE E

Design features for Alternative E are described in Section 2.4.5 and Appendix 2A. In addition, the following stipulations would also apply:

- The visual or scenic values of the public lands will be considered whenever any physical actions are proposed on public lands. The degree of alterations to the natural landscape

will be guided by the criteria established for the four VRM classes as outlined in BLM 8400. VRM classes will be managed as shown on Map 9 of 1987 Jarbidge RMP (1987 Jarbidge RMP).

- In crucial wildlife habitats (winter ranges, raptor nest sites, strutting grounds, fawning habitat, etc.), construction and maintenance work will be scheduled to avoid or minimize disturbance to wildlife. (1987 Jarbidge RMP).

- Improve raptor habitat by requiring all new power lines in raptor areas to be constructed to "electrocution proof" specification (See #25 under General Project Construction Including Roads, Drainage and Power Lines) (1987 Jarbidge RMP).

- No construction or other activities within crucial big game winter range from November 15 through April 30, unless a temporary short-term exception is granted by the BLM field office manager. (Seasonal restrictions meet the intent of the 1987 Jarbidge RMP but have been updated based on current literature).

- Large-scale construction activities shall be avoided within 4 miles (6.4 km) of occupied or undetermined status sage-grouse leks from February 15 to June 30 (Information Bulletin No ID-2010-039). Exceptions may be granted for construction or maintenance activities involving only infrequent, short-term disturbance (less than 1 hour within a 24-hour period in a specific area); or if there are intervening topographic features or line-of-sight screening that buffer the lek or nesting habitat from disturbance; or if recent (within the past 5 years) site-specific studies or local expertise suggest that nesting hens are unlikely to be present within the 4-mile zone surrounding the project activity. (Seasonal restrictions meet the intent of the 1987 Jarbidge RMP but have been updated based on current literature).

- Large-scale construction activities shall be avoided within 4 miles (6.4 km) of occupied or undetermined status sharp-tailed grouse leks when in proximity to sage-grouse leks from February 15 to June 30 (Information Bulletin No ID-2010-039 and 1987 Jarbidge RMP). Exceptions could be granted as described for sage-grouse (Seasonal restrictions meet the intent of the 1987 Jarbidge RMP but have been updated based on current literature).

- Large-scale construction activities shall be avoided within 1.2 miles (2.0 km) of occupied or undetermined status sharp-tailed grouse leks when not in proximity to sage-grouse leks from February 15 to June 30 (Information Bulletin No ID-2010-039 and 1987 Jarbidge RMP). Exceptions could be granted as described for sage-grouse (Seasonal restrictions meet the intent of the 1987 Jarbidge RMP but have been updated based on current literature).

- No occupancy within sage-grouse and sharp-tailed grouse nesting/brood-rearing habitat April 15 through June 30 (Seasonal restrictions meet the intent of the 1987 Jarbidge RMP but have been updated based on current literature).

- No occupancy in sage-grouse and sharp-tailed grouse winter range December 1 through February 15 (Seasonal restrictions meet the intent of the 1987 Jarbidge RMP but have been updated based on current literature).

- No occupancy within 0.5 miles of a golden eagle nest from January 1 through August 31 (Seasonal restrictions meet the intent of the 1987 Jarbidge RMP but have been updated based on current literature).

- No occupancy within 0.5 miles of a prairie falcon nest from March 15 through August 31 (Seasonal restrictions meet the intent of the 1987 Jarbidge RMP but have been updated based on current literature).

- No occupancy within 1.0 mile of a ferruginous hawk nest from March 15 through August 31 (Seasonal restrictions meet the intent of the 1987 Jarbidge RMP but have been updated based on current literature).

- No occupancy within 0.25 miles of a burrowing owl nest from March 15 through August 31 (Seasonal restrictions meet the intent of the 1987 Jarbidge RMP but have been updated based on current literature).

- Construction, decommissioning, and major maintenance activities will be subject to seasonal and spatial protection from disturbance to avoid displacement and mortality of raptor young (Table 2.11-2). BLM will require migratory bird nesting surveys to be conducted by a BLM-approved wildlife biologist using current United States Fish and Wildlife Service protocols. Such surveys shall be conducted no more than 14 days prior to commencement of surface-disturbing activities in an area. If disturbance does not occur within 14 days of the survey, the site shall be resurveyed. If during any surveys, nests or nesting behavior are documented, the area must be avoided until the young have fledged from the nest or the nest fails. Nest results will be determined by the above-mentioned wildlife biologist. Survey results shall be reported to the BLM, Idaho Department of Fish and Game, and the Nevada Department of Wildlife once the survey is completed. Compliance with this stipulation does not constitute full compliance with, or exemption from, the Migratory Bird Treaty Act as amended (16 United States Code §§ 703-712) or any other legislation (Restrictions meet the intent of the 1987 Jarbidge RMP and the 1985 Wells RMP but have been updated based on current literature).

- Reservoirs, ponds, lakes, streams, wetlands, marshes, riparian: no occupancy within 500 feet year-round (1987 Jarbidge RMP).

Table 2.11-2. Seasonal and Spatial Restrictions for Raptors - Alternative E.

Species	Seasonal Buffer[1]	Spatial Buffer[2]
Turkey Vulture	2/1[3] – 8/15	0.5 mile[1]
Northern Harrier	4/1 – 8/15	0.25 mile
Cooper's Hawk	3/15 – 8/31	0.25 mile
Sharp-shinned Hawk	3/15 – 8/31	0.25 mile
Northern Goshawk	3/1 – 8/15	0.5 mile
Red-tailed Hawk	3/15 – 8/15	0.33 mile
Swainson's Hawk	3/1 – 8/31	0.25 mile
Ferruginous Hawk	3/1 – 8/1	1.0 mile
Golden Eagle	1/1 – 8/31	0.5 mile
Bald Eagle	1/1 – 8/31	1.0 mile
American Kestrel	4/1 – 8/15	0.125 mile
Prairie Falcon	3/1[3] – 8/31	0.5 mile
Peregrine Falcon	2/1 – 8/31	1.0 mile
Barn Owl	2/1 – 9/15	0.125 mile
Long-eared Owl	2/1 – 8/15	0.125 mile
Short-eared Owl	3/1 – 8/1	0.25 mile
Flammulated Owl	4/1 – 9/30	0.25 mile
Western Screech-owl	3/1 – 8/15	0.125 mile
Great Horned Owl	12/1 – 9/30	0.125 mile
Northern Pygmy Owl	4/1 – 8/1	0.25 mile
Burrowing Owl	3/1 – 8/31	0.25 mile
Northern Saw-whet Owl	3/1 – 8/31	0.125 mile

1 From Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances (Romin & Muck, 2002).

2 From Guidelines for Raptor Conservation in the Western United States, except where noted (Whittington & Allen, 2008).

3 From Nevada Raptors: Their Biology and Management (Herron, Mortimore, & Rawlings, 1985).

2.11.3 PLAN AMENDMENTS TO THE 1987 JARBIDGE RMP

Under Alternative E, there would be no amendments to the 1987 Jarbidge RMP.

2.11.4 MITIGATION

No mitigation specific to Alternative E is being proposed.

2.11.5 MONITORING

Under Alternative E, monitoring would be the same as Alternative B1 with the exception that monitoring listed in Appendix 2B would not apply.

2.12 ALTERNATIVE F

Alternative F was developed to address the issue related to cultural sites and tribal values in the project area. Under Alternative F, 65 turbines would be eliminated from the project layout as identified in Alternative B1 (Figure 2.12-1). As a result, Alternative F would consist of 105 turbines.

In addition to the ROW for the construction and operation of the wind energy facility, several other ancillary facilities would be authorized through separate ROW grants as described for Alternative B1.

2.12.1 PROJECT FEATURES

Project construction would disturb a total of 544 acres, including project features common to all (59 acres). Disturbance acres for project features that vary by alternative are summarized in Table 2.12-1 and discussed below.

Table 2.12-1. Summary of Alternative F Project Features that Vary by Alternative.

Project Features	Amount
Number of turbines	105
Project capacity	210 MW
Project roads total	66 miles
Reconstructed	20 miles
New	46 miles
Underground collection system	26 miles
Laydown yard	3

2.12.1.1 Turbines

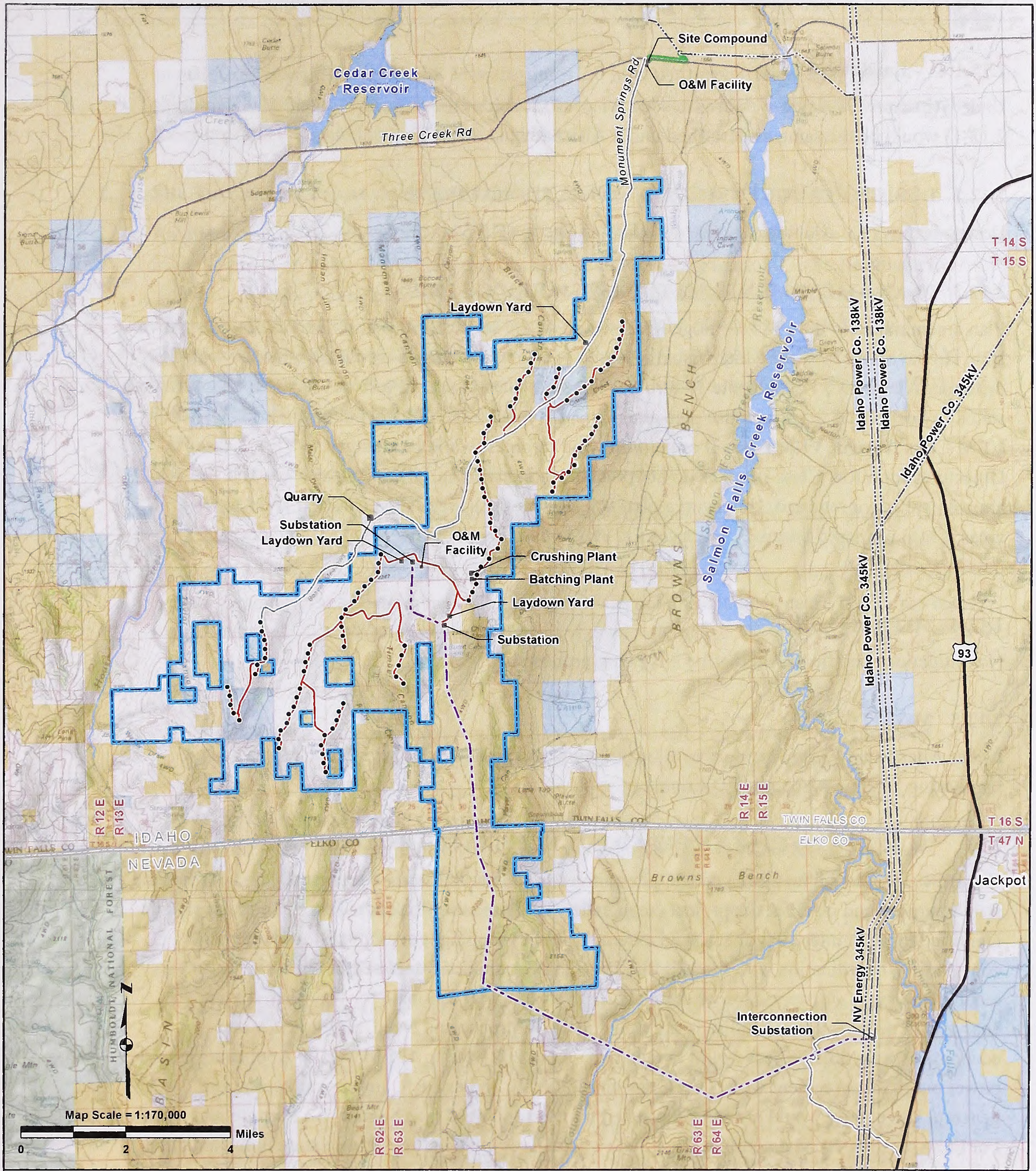
Alternative F consists of the construction and operation of up to 105 wind turbine generators that would provide up to 210 MW of electricity (Table 2.12-1). Construction of turbine pads and associated turbine component laydown areas would result in up to 221 total acres of disturbance. Turbines would be sited on public (50%), IDL (14%), and private lands (36%).

2.12.1.2 Project Roads

Under Alternative F there would be up to 66 miles (214 acres) of road reconstruction or new road construction (Figure 2.12-1; Table 2.12-1). Up to 20 miles of existing roads would be reconstructed. An additional 46 miles of new road would be constructed to provide access to turbines and other project facilities. Roads would be sited on public (59%), IDL (10%), and private lands (31%).

2.12.1.3 Underground Collection System

Under Alternative F, there would be about 26 miles of underground collection trenches that would result in up to 41 acres of total disturbance (Table 2.12-1). The underground collection system would be sited on public (49%), IDL (19%), and private lands (32%).



LEGEND		
Right-of-way Preference Area		
Phase I Turbine Location	Underground Distribution Line	
Proposed Transmission Line (345 kV)	Existing Transmission Line	
Proposed New Road	Existing Road - Reconstruction Proposed	
Land Status (Ownership)		
BLM	Private	State	USFS

Figure 2.12-1. Alternative F

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2.12.1.4 Laydown Yards

Under Alternative F, laydown yards needed for construction of the project (Figure 2.12-1; Table 2.12-1) would be the same as described under Alternative D.

2.12.2 DESIGN FEATURES SPECIFIC TO ALTERNATIVE F

Design features for Alternative F are described in Section 2.4.5 and Appendix 2A.

2.12.3 PLAN AMENDMENTS TO THE 1987 JARBIDGE RMP

Plan amendments to the 1987 Jarbidge RMP would be the same as those described under Alternative B2b. However, the area for which visual resource management classes would be amended would be different. Alternative F would site 13 turbines in VRM Class II and 92 turbines in VRM Class III. As stated in Section 2.5.3.1 a land use plan amendment is required to allow wind turbines to be sited in VRM Class II areas. VRM Class II areas with wind turbines would be changed to VRM Class IV. Objectives for VRM Class III areas do not preclude siting wind turbines in these areas and a plan amendment is not required. However, a plan amendment to change VRM Class III areas to Class IV areas is also proposed because objectives for VRM Class IV are better suited to wind energy development.

2.12.4 MITIGATION

No mitigation specific to Alternative F is being proposed.

2.12.5 MONITORING

Under Alternative F, monitoring would be the same as Alternative B1 with the exception that monitoring listed in Appendix 2B would not apply.

2.13 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

The BLM considered but eliminated 11 alternatives from detailed study because they do not meet the stated purpose and need for the project (see Section 1.3 Purpose and Need). These alternatives were identified through internal (agency) and external (public) scoping, government-to-government consultation, coordination with the Wildlife Working Group, and interdisciplinary resource recommendations. A description of these alternatives and brief rationale for why they are not analyzed in detail follows. As discussed in Section 1.3 Purpose and Need, a technically and economically feasible project would range in size from 200 MW to 425 MW. The Applicants have a power purchase agreement with NV Energy for 200 MW; and as such, any project that would generate less energy would not meet the stated purpose and need (see Section 1.3 Purpose and Need). For these reasons, BLM determined that these alternatives were not reasonable and eliminated them from detailed study.

1. Site All Turbines on Private and State Lands

During scoping, an alternative was suggested that would locate all turbines on private or IDL lands (Figure 2.13-1). This would result in a project layout with approximately 54 turbines and

an estimated energy output of 108 MW (assumes 2.0 MW per turbine annually). This alternative would not be reasonable because it does not result in a technically and economically feasible project as stated in the Purpose and Need.

2. **Site Turbines on Private and State Lands in Idaho and on Public Lands in Nevada**

An alternative was considered that would site the wind power facility on private and IDL lands in Idaho (none on public lands) and on public lands in Nevada (Figure 2.13.-2). Rationale for including Nevada public lands was because of the power purchase agreement with Nevada. This alternative would provide for the siting of approximately 76 wind turbines and an estimated energy output of 152 MW of power (assuming 2.0 MW per turbine annually). BLM determined this alternative was not reasonable because it does not meet the minimum of 200 MW to meet the purpose and need statement.

3. **Site All Wind Turbines Out of View from any of the KOPs**

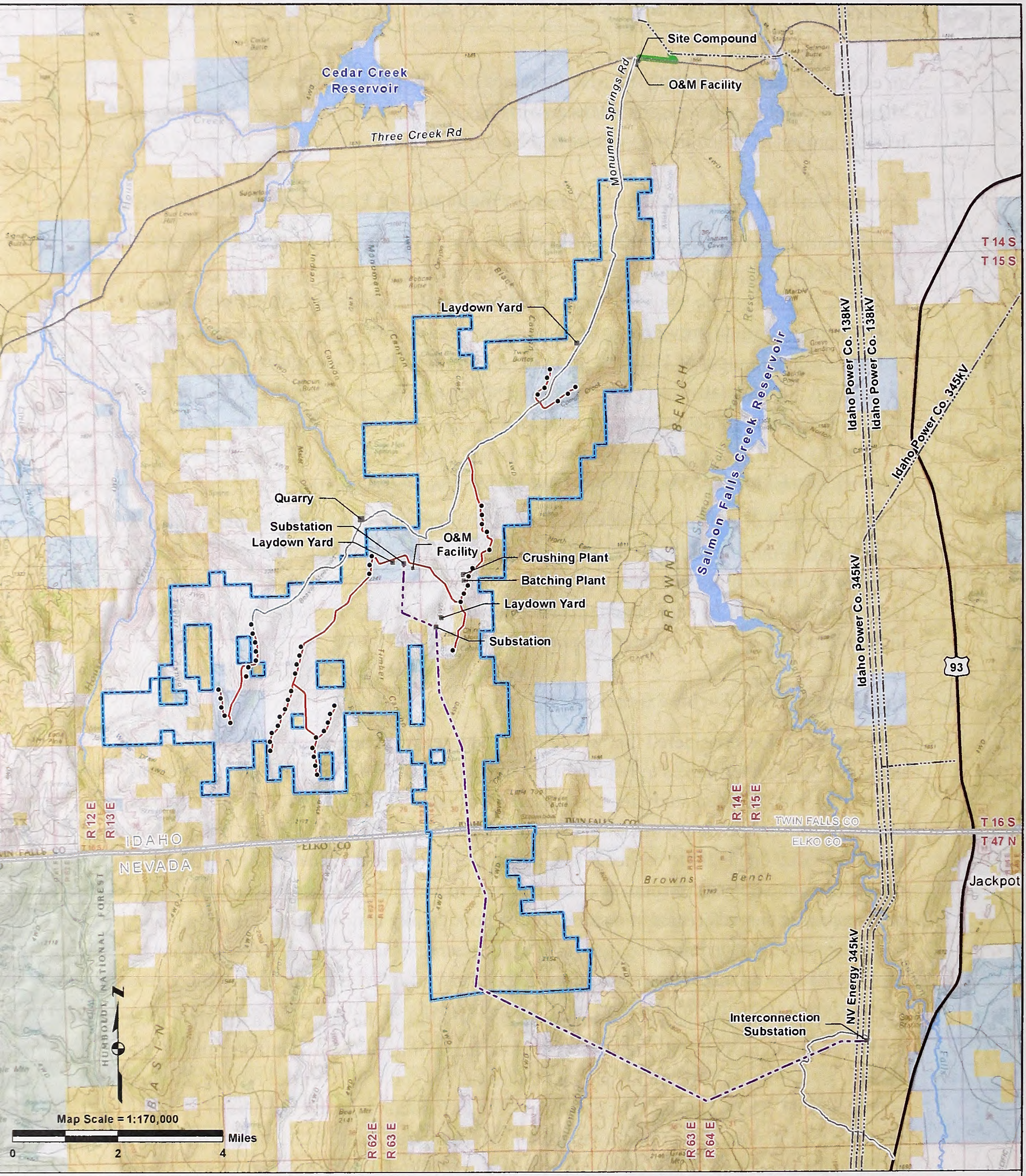
An alternative was considered that would site all wind turbines so that no visual impacts would be perceived from any of the KOPs (Figure 2.13-3). This alternative would provide for the siting of 5 wind turbines generating approximately 10 MW of power (assuming 2.0 MW per turbine annually). BLM determined this alternative was not reasonable because it does not meet the minimum of 200 MW to meet the purpose and need statement.

4. **Use Shorter Wind Turbine Generators**

An alternative was considered that would utilize shorter wind turbines than those proposed under the action alternatives to reduce visual impacts from the KOPs. This alternative was eliminated from detailed study for two reasons. One, shorter turbines could reduce the visual impact; however, these turbines would still be visible from most of the KOPs. Two, selection of a turbine based on height to reduce visual impacts is not practical because there is limited flexibility in the range of turbine size that can be selected. The choice of turbine height is based on the specific characteristics of a site including topography and wind speed.

5. **Site the Project at a Different Location**

During scoping, an alternative was suggested that would site the project at a different location, such as in cheatgrass (*Bromus tectorum*) infested areas or an area that contains other degraded habitat, so that impacts to natural and cultural resources could be avoided. No specific location was suggested. The Applicants proposed the China Mountain location because of the wind resource potential and the proximity to existing transmission lines. BLM must respond to the ROW application, and as part of the purpose and need, consider the Applicants' objectives. BLM determined this alternative was not reasonable because it did not identify a specific alternative location that would have similar wind resource potential. Based on the analysis in the Wind PEIS (BLM, 2005b), there are no other large blocks of available public land in the southern Idaho and northern Nevada area that have similar wind potential and proximity to existing transmission lines for a project of this size.



LEGEND

- Right-of-way Preference Area
- Turbine Location
- Proposed Transmission Line (345 kV)
- Proposed New Road
- Underground Distribution Line
- Existing Transmission Line
- Existing Road - Reconstruction Proposed

Land Status (Ownership)

BLM | Private | State | USFS

Figure 2.13-1. Alternative Considered but Eliminated from Detailed Study:
Site All Turbines on Private and State Lands

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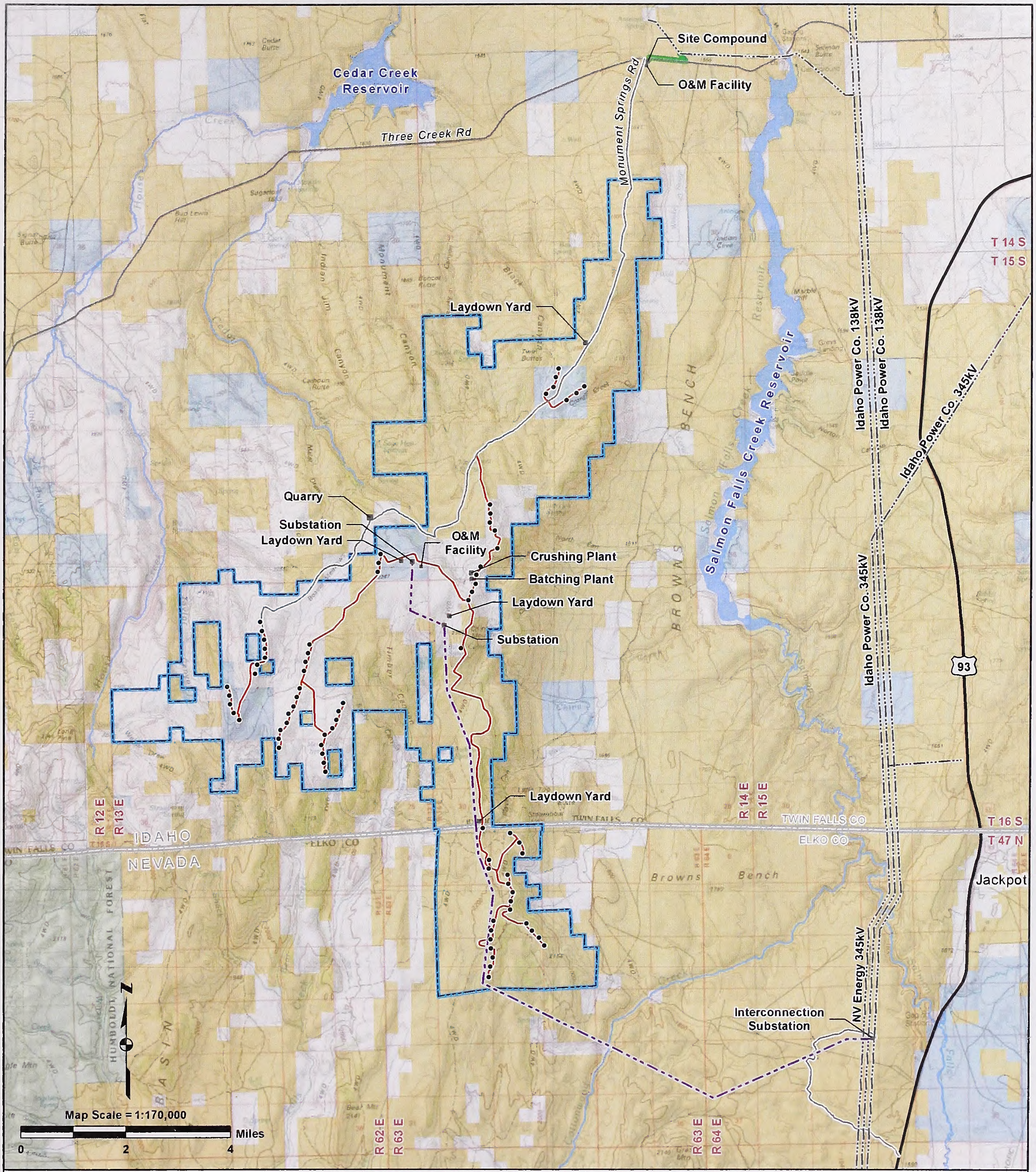

LEGEND

- Right-of-way Preference Area
- Turbine Location
- Proposed Transmission Line (345 kV)
- Proposed New Road
- Underground Distribution Line
- Existing Transmission Line
- Existing Road - Reconstruction Proposed

Land Status (Ownership)

BLM | Private | State | USFS

Figure 2.13-2 Alternative Considered but Eliminated from Detailed Study:
Turbines on Private and State Lands in Idaho and Public Lands in Nevada

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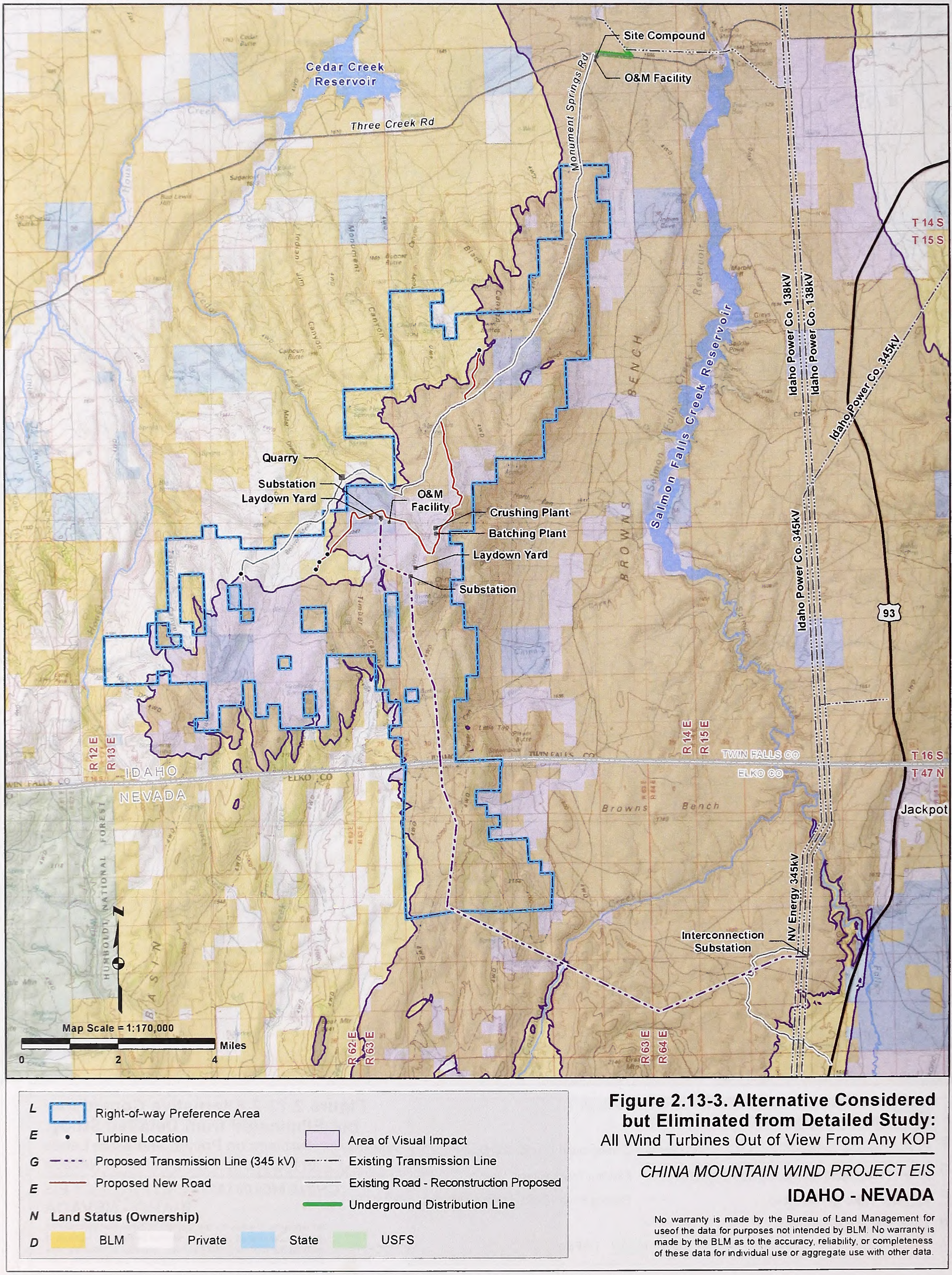

Figure 2.13-3. Alternative Considered but Eliminated from Detailed Study:
All Wind Turbines Out of View From Any KOP

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6. Avoid All Culturally Sensitive Areas

An alternative was considered that would site the project to avoid all culturally sensitive areas. Due to the abundance and widespread distribution of cultural sites in the project area, it is unlikely that a project could be sited to avoid all culturally sensitive areas. Therefore, an alternative that avoids all culturally sensitive areas would not allow for development of a project at the China Mountain site. This alternative would be equivalent to the No Action Alternative, which is analyzed in detail in this EIS. In addition, Alternative F was developed to reduce impacts to cultural resources while still meeting the purpose and need.

7. Site All Project-Related 345 kV Transmission Lines Underground

An alternative was considered that would bury all transmission lines underground so that potential collision and electrocution risks to sage-grouse, raptors, and other migratory birds could be avoided. This alternative was considered to be consistent with one of the sage-grouse conservation measures presented in the Conservation Plan for Greater Sage-Grouse in Idaho (Idaho Sage-grouse Advisory Committee, 2006, p. 4-42). Nineteen miles of transmission lines are proposed for the project. Burial of this length of line would result in more ground disturbance than an overhead transmission line, and due to the geology of the area, would likely require extensive blasting in addition to excavation.

The installation of underground 345 kV transmission lines requires the excavation of a large open trench. A long-term project road would be required for the entire length of the buried cables. Underground concrete vaults would be required approximately every 2,000 feet. Above ground access portals to the vaults would also be required. The vaults would be used to house the splice assemblies, provide access for inspections of the system, and to sectionalize segments of cable in the event of a failure to allow maintenance staff to locate the faulted cable and repair the damaged section.

Recent research is developing new techniques for manufacturing, design, construction, and maintenance of underground transmission lines. However, there are several important issues that make the technology for high voltage transmission lines impractical for long distance underground installations as described below:

- Cost—The construction cost of underground high voltage transmission lines are increased by 7 to 20 times greater than their overhead counterpart.
- Reliability—Underground systems have comparatively fewer outages than overhead lines. However, damage to the cable or components often results in longer outage durations. Outages often require excavation and sometimes replacement of the buried cables.
- Environmental—While project road requirements are similar for both underground and overhead lines, underground transmission lines require a continuous excavation for the

entire length of the line. Continuous excavation results in more vegetation removal and more soil disturbance when compared to overhead lines.

For the reasons stated above, the BLM determined that burying the 345 kV transmission interconnect line was not feasible.

8. Site Transmission Lines on the Surface of the Ground

An alternative was considered that would site all transmission lines on the surface of the ground within insulated, shielded cables to eliminate potential collision and electrocution risks to sage-grouse, raptors, and other migratory birds. This alternative was considered to be consistent with one of the sage-grouse conservation measures presented in the Conservation Plan for Greater Sage-Grouse in Idaho (Idaho Sage-grouse Advisory Committee, 2006, p. 4-42).

Currently there are no known such transmission systems in use in the United States and as a result this technology is unproven. Laying a 345 kV transmission line, even in an insulated cable or pipe, on the surface of the ground creates concerns that make the use of this technology for high voltage transmission lines unreasonable.

- Reliability—Since this technology is unproven, its reliability is unknown. It can be assumed that exposure to the elements would cause the insulation to degrade thus requiring regular replacement of segments of the cable. Having the cable on the surface of the ground would also make it susceptible to damage from livestock and other animals that could chew on the insulation.

- Safety—Placing the transmission line on the surface of the ground, even though enclosed in an insulated casing, could create a safety risk to the public and project maintenance workers who may come in contact.

For the reasons stated above, the BLM determined that siting the 345kV transmission line on the surface of the ground was not feasible.

9. Create a Corridor for Sage-grouse Movement by Removing Turbines from the Central Portion of the Project Area

An alternative was considered that would remove turbines from the middle of the project area to create a "corridor" for sage-grouse movement (Figure 2.13-4). This alternative was eliminated from detailed analysis for two reasons: 1) the overhead transmission line would still be sited in a portion of the "corridor," thus reducing the potential use of such a corridor to sage-grouse, and 2) there is no scientific data indicating this would reduce potential impacts. Based on Walker, Naugle and Doherty (2007), indirect effects to sage-grouse have been documented up to 4 miles from developments; therefore, removing turbines in the middle of the project area is not likely to lessen impacts to sage-grouse. BLM determined this alternative was not reasonable because it was unlikely to reduce impacts to sage-grouse. Alternative D was

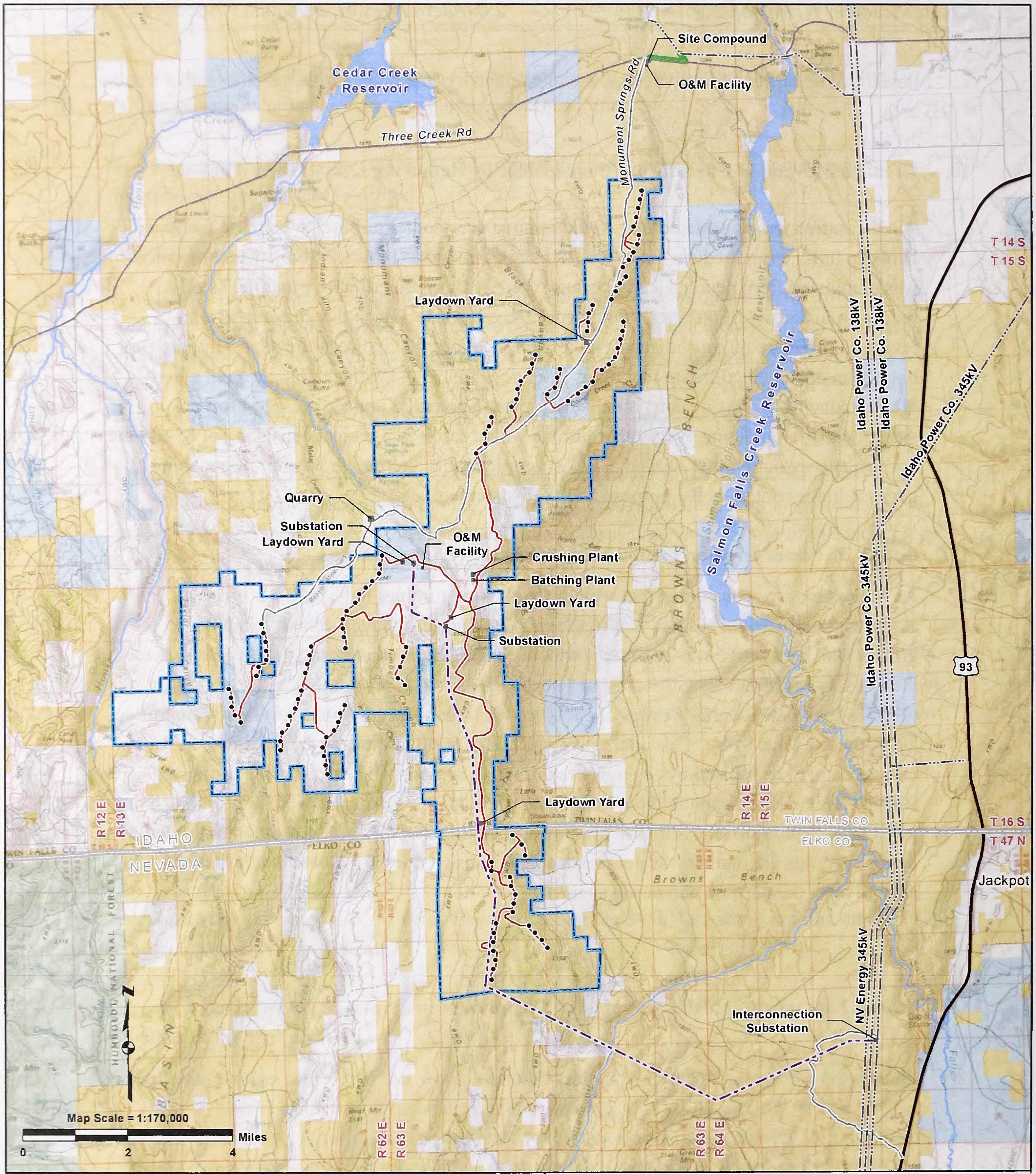
developed in part to address sage-grouse movement by consolidating the turbines into a smaller area.

10. Create a Movement Corridor for Sage-grouse by Removing Every Other Turbine

An alternative was considered that would remove every other turbine, to increase the space between turbines and reduce the overall density of turbines (Figure 2.13-5). This alternative was eliminated from detailed study because there was no scientific data that indicated a reduction in density of turbines would benefit sage-grouse. Given that the current peer-reviewed literature on oil and gas development indicates that indirect effects to sage-grouse have been documented for up to 4 miles from developments (Walker, Naugle and Doherty, 2007), reducing turbine density is unlikely to lessen potential impacts to sage-grouse. Additionally, eliminating every other turbine would result in a project consisting of 85 turbines with an energy output of 170 MW. BLM determined this alternative was not reasonable because it does not meet the purpose and need statement.

11. Site all Turbines Greater Than 5 Miles from Active Sage-grouse Leks

An alternative was considered that would site all wind turbines outside of a 5-mile buffer of active sage-grouse leks (Figure 2.13-6). It was developed to reduce potential impacts to sage-grouse. This alternative was consistent with the sage-grouse conservation measures presented in the Conservation Plan for Greater Sage-Grouse in Idaho that recommended the placement of turbines be avoided within 5 miles of occupied leks (Idaho Sage-grouse Advisory Committee, 2006, pp. 4-38 and 4-44). This alternative avoided placing turbines in areas known, based on current data, to be utilized by sage-grouse during all seasons (95% fixed kernel estimate; Figure 2.13-6). This alternative would provide for the siting of approximately 50 wind turbines generating approximately 100 MW of power (assuming 2.0 MW per turbine annually). BLM determined this alternative was not reasonable because it does not meet the minimum of 200 MW to meet the purpose and need statement.



LEGEND

- Right-of-way Preference Area
- Turbine Location
- Proposed Transmission Line (345 kV)
- Proposed New Road
- Underground Distribution Line
- Existing Transmission Line
- Existing Road - Reconstruction Proposed

Land Status (Ownership)

BLM | Private | State | USFS

Figure 2.13-4. Alternative Considered but Eliminated from Detailed Study: Turbines Removed From Central Portion of Project Area to Create a Corridor for Sage-Grouse Movement

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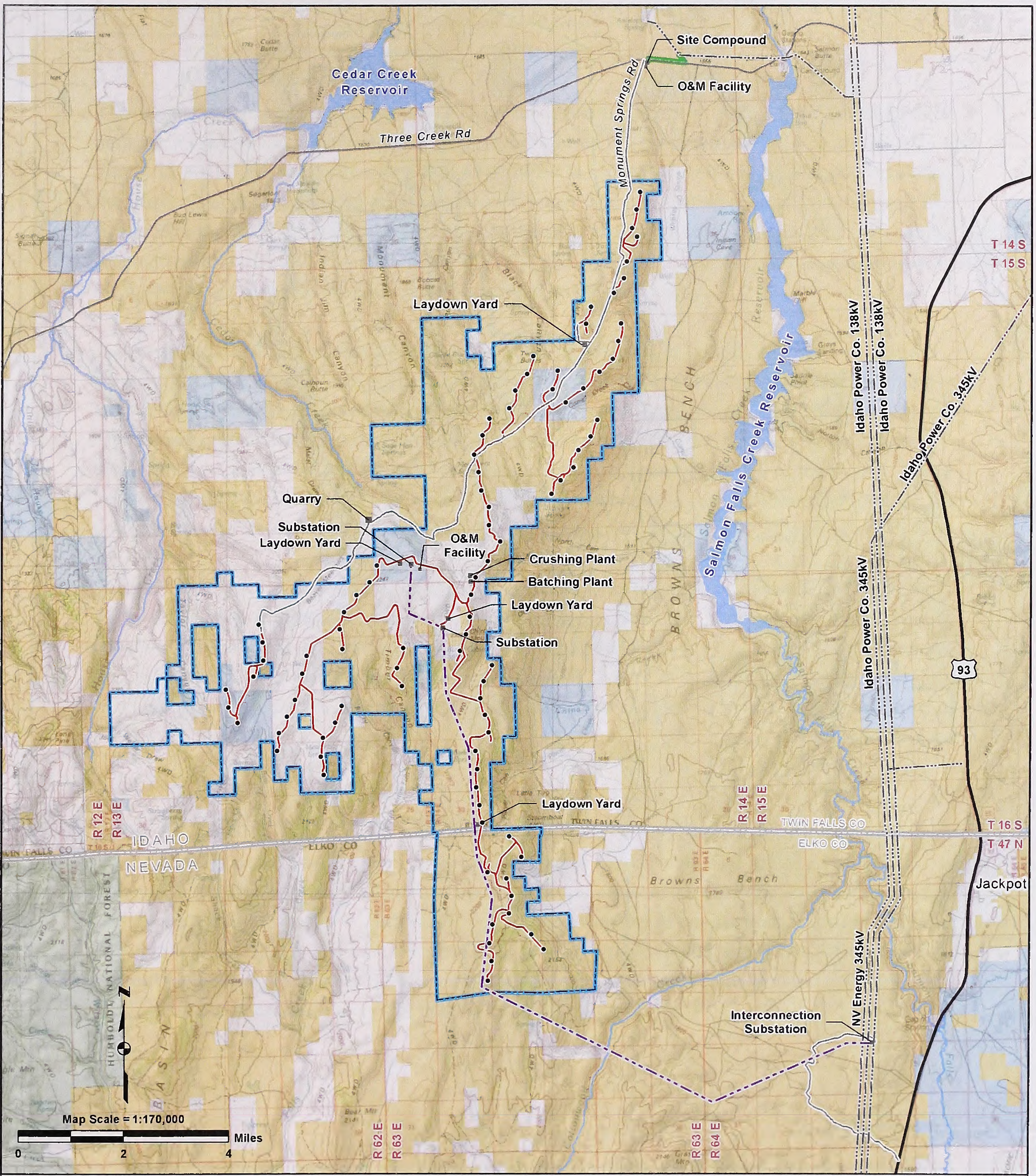

LEGEND

- Right-of-way Preference Area
- Turbine Location
- Proposed Transmission Line (345 kV)
- Proposed New Road
- Underground Distribution Line
- Existing Transmission Line
- Existing Road - Reconstruction Proposed

Land Status (Ownership)

BLM | Private | State | USFS

Figure 2.13-5. Alternative Considered but Eliminated from Detailed Study:
Remove Every Other Turbine for Sage-Grouse Movement Corridor

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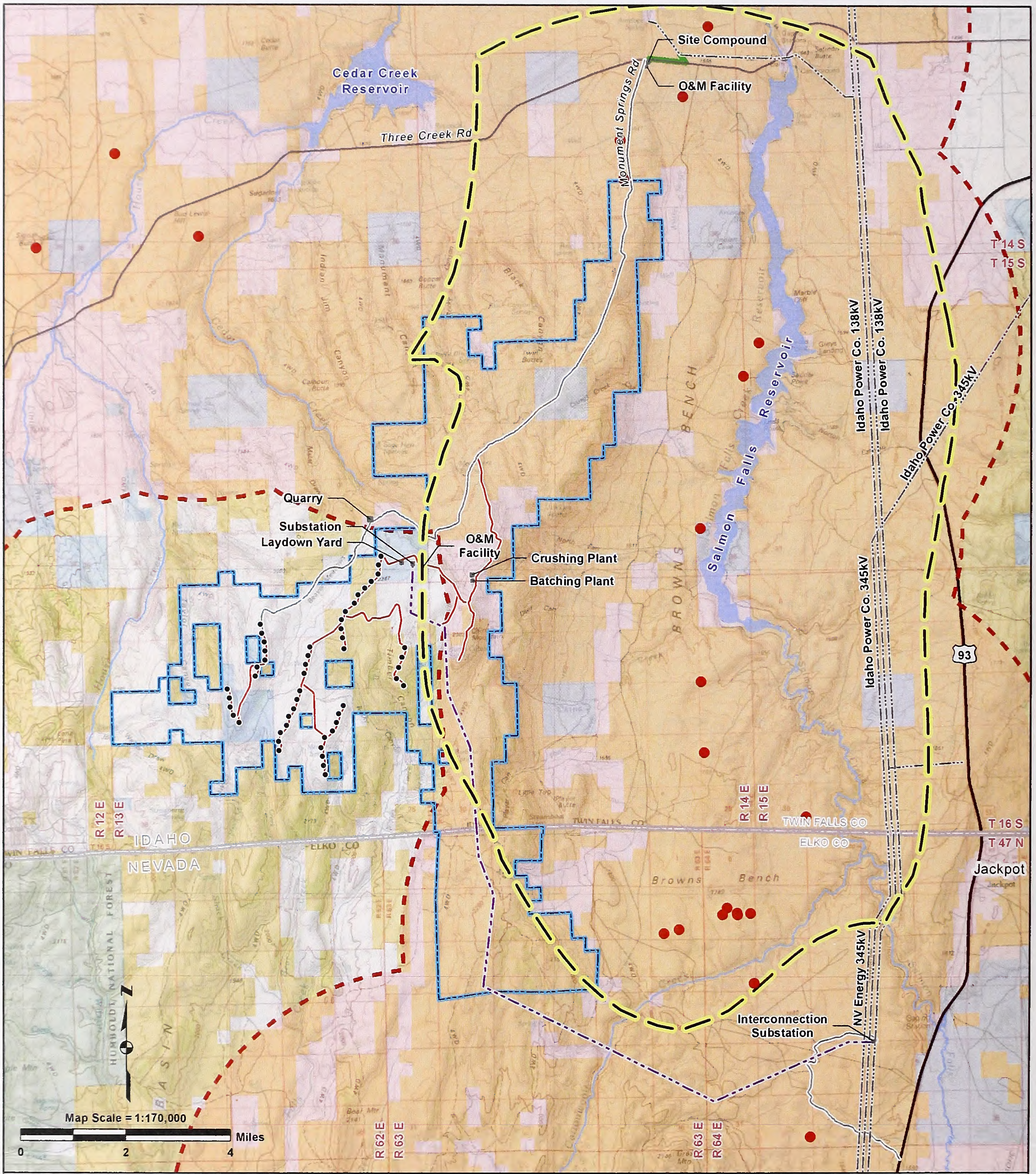

LEGEND

Right-of-way Preference Area	Underground Distribution Line
Turbine Location	Existing Road - Reconstruction Proposed
Proposed New Road	Existing Transmission Line
Proposed Transmission Line (345 kV)	

Sage-grouse Resources

- Active Sage-grouse Lek Locations
- Active Sage-grouse Lek 5-Mile Buffer
- 95% Fixed Kernal Estimate (Volume)

Land Status (Ownership)

- BLM
- Private
- State
- USFS

Figure 2.13-6. Alternative Considered but Eliminated from Detailed Study:
Site All Turbines Greater Than 5 Miles From Active Sage-Grouse Leks

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2.14 PREFERRED ALTERNATIVE

The alternatives summarized in Section 2.15 are analyzed in Chapter 4. At this time, the BLM does not have a preferred alternative for the project. A preferred project alternative will be identified in the Final EIS per NEPA regulations 40 C.F.R 1502.14(e). In accordance with BLM planning regulations, the BLM must identify a preferred alternative(s) for any land use plan amendments in the Draft EIS. In this EIS, the BLM has chosen to identify a preferred plan amendment alternative that will support Alternatives B2b, B2c, C, D, and F, rather than a single preferred alternative for the project. In doing so, the BLM endeavors to facilitate public comment on all alternatives.

As shown in Table 2.3-1 (Overview of the Alternatives Analyzed in Detail), Alternatives A and E would not require any land use plan amendments. Alternatives B1 and B2a propose one suite of plan amendments while Alternatives B2b, B2c, C, D, and F propose a second suite of plan amendments. The second suite differs from the first in that the second would not grant an exception to seasonal restrictions and spatial buffers for wildlife during the 30-year operation period of the facility. Based on the analysis, the BLM prefers the second set of plan amendments because they offer more protection to the resources while allowing for wind generation.

The preferred alternative indicates the agency's preliminary preference. However, identification of the preferred plan amendment alternative does not represent a final BLM decision and may change between publication of the Draft and Final EIS based on comments received on the Draft EIS, new information, or changes in BLM policies or priorities. BLM has the discretion to select an alternative in its entirety or to combine aspects of the various alternatives presented in this draft to develop the Final EIS.

2.15 COMPARISON OF EFFECTS OF ALTERNATIVES

Tables 2.15-1 and 2.15-2 provide a summary of the impacts of the project in terms of the impacts that are projected to occur from implementing the alternatives and inbound haul routes presented in Chapter 2. The effects of each alternative are discussed in detail in the environmental consequences section presented in Chapter 4. Differences between the wording of environmental consequences in the main text of Chapter 4 and the wording in the summary table should not be construed to confine or redefine the analysis of impacts. Wording was modified to be more concise in the summary table. Sections are summarized in the order in which they appear in Chapter 4.

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Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives.

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
PHYSICAL									
Air Quality	No new impacts from the No Action Alternative.	Fugitive dust and tailpipe emissions would be generated as a result of 812 acres of total surface disturbance and 83 miles of new or reconstructed roads. Emissions would dissipate locally and would result in direct, short- and long-term impacts.	**Phase I** Fugitive dust and tailpipe emissions would be generated as a result of 536 acres of total surface disturbance and 63 miles of new or reconstructed roads. **Phase II** Fugitive dust and tailpipe emissions would be generated as a result of 301 acres of total surface disturbance and 20 miles of new or reconstructed roads. **Phase I and II** Fugitive dust and tailpipe emissions would be generated as a result of 837 acres of total surface disturbance and 83 miles of new or reconstructed roads.	**Phase I** Fugitive dust and tailpipe emissions would be generated as a result of 523 acres of total surface disturbance and 62 miles of new or reconstructed roads. **Phase II** Fugitive dust and tailpipe emissions would be generated as a result of 313 acres of total surface disturbance and 21 miles of new or reconstructed roads. **Phase I and II** Fugitive dust and tailpipe emissions would be generated as a result of 836 acres of total surface disturbance and 83 miles of new or reconstructed roads.	**Phase I** Fugitive dust and tailpipe emissions would be generated as a result of 564 acres of total surface disturbance and 70 miles of new or reconstructed roads. **Phase II** Fugitive dust and tailpipe emissions would be generated as a result of 267 acres of total surface disturbance and 13 miles of new or reconstructed roads. **Phase I and II** Fugitive dust and tailpipe emissions would be generated as a result of 831 acres of total surface disturbance and 83 miles of new or reconstructed roads.	Fugitive dust and tailpipe emissions would be generated as a result of 745 acres of total surface disturbance and 80 miles of new or reconstructed roads. Emissions would dissipate locally and would result in direct, short- and long-term impacts.	Fugitive dust and tailpipe emissions would be generated as a result of 631 acres of total surface disturbance and 72 miles of new or reconstructed roads. Emissions would dissipate locally and would result in direct, short- and long-term impacts.	Fugitive dust and tailpipe emissions would be generated as a result of 656 acres of total surface disturbance and 76 miles of new or reconstructed roads. Emissions would dissipate locally and would result in direct, short- and long-term impacts.	Fugitive dust and tailpipe emissions would be generated as a result of 544 acres of total surface disturbance and 66 miles of new or reconstructed roads. Emissions would dissipate locally and would result in direct, short- and long-term impacts.
Geology	Geologic resources would not be impacted from project construction activities under the No Action Alternative. Natural erosion processes would continue to occur.	Coring for geotechnical site evaluations prior to construction of 170 wind turbines would create direct minor localized long-term impacts. Potential to impact geology on all, or portions of 296 acres associated with the construction and reconstruction of 83 miles of roads; 360 acres associated with wind turbine construction; and 84 acres/51 miles of underground collection system.	**Phase I** Coring for 100 wind turbines. Potential to impact geology on all, or portions of 202 acres associated with the construction and reconstruction of 63 miles of roads; 211 acres associated with wind turbine construction; and 51 acres/35 miles of underground collection system. Geologic hazard potential would be associated with 19 acres of total surface disturbance on slopes >20% and 64 acres on slopes from 12 – 20%.	**Phase I** Coring for 100 wind turbines. Potential to impact geology on all, or portions of 192 acres associated with the construction and reconstruction of 62 miles of roads; 212 acres associated with wind turbine construction; and 48 acres/30 miles of underground collection system. Geologic hazard potential would be associated with 18 acres of total surface disturbance on slopes >20% and 60 acres on slopes from 12 – 20%.	**Phase I** Coring for 100 wind turbines. Potential to impact geology on all, or portions of 234 acres associated with the construction and reconstruction of 70 miles of roads; 212 acres associated with wind turbine construction; and 50 acres/30 miles of underground collection system. Geologic hazard potential would be associated with 20 acres of total surface disturbance on slopes >20% and 65 acres on slopes from 12 – 20%.	Coring for 152 wind turbines. Potential to impact geology on all, or portions of 280 acres associated with the construction and reconstruction of 80 miles of roads; 322 acres associated with wind turbine construction; and 72 acres/44 miles of underground collection system. Geologic hazard potential would be associated with 26 acres of total surface disturbance on slopes >20% and 86 acres on slopes from 12 – 20%.	Coring for 124 wind turbines. Potential to impact geology on all, or portions of 240 acres associated with the construction and reconstruction of 72 miles of roads; 263 acres associated with wind turbine construction; and 59 acres/36 miles of underground collection system. Geologic hazard potential would be associated with 22 acres of total surface disturbance on slopes >20% and 71 acres on slopes from 12 – 20%.	Coring for 120 wind turbines. Potential to impact geology on all, or portions of 259 acres associated with the construction and reconstruction of 76 miles of roads; 254 acres associated with wind turbine construction; and 71 acres/42 miles of underground collection system. Geologic hazard potential would be associated with 22 acres of total surface disturbance on slopes >20% and 69 acres on slopes from 12 – 20%.	Coring for 105 wind turbines. Potential to impact geology on all, or portions of 214 acres associated with the construction and reconstruction of 67 miles of roads; 221 acres associated with wind turbine construction; and 41 acres/26 miles of underground collection system. Geologic hazard potential would be associated with 16 acres of total surface disturbance on slopes >20% and 57 acres on slopes from 12 – 20%.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
Geology (continued)		Geologic hazard potential would be associated with 27 acres of total surface disturbance on slopes >20% and 93 acres on slopes from 12 – 20%.	**Phase II** Coring for 70 wind turbines. Potential to impact geology on all, or portions of 94 acres associated with the construction and reconstruction of 20 miles of roads; 150 acres associated with wind turbine construction; and 32 acres/15 miles of underground collection system. Geologic hazard potential would be associated with 7 acres of total surface disturbance on slopes >20% and 30 acres on slopes from 12 – 20%. **Phase I and II** Coring impacts, potential impacts on geology, and geologic hazard potential – same as Alternative B1.	**Phase II** Coring for 70 wind turbines. Potential to impact geology on all, or portions of 103 acres associated with the construction and reconstruction of 21 miles of roads; 148 acres associated with wind turbine construction; and 36 acres/21 miles of underground collection system. Geologic hazard potential would be associated with 10 acres of total surface disturbance on slopes >20% and 33 acres on slopes from 12 – 20%. **Phase I and II** Coring impacts, potential impacts on geology, and geologic hazard potential – same as Alternative B1.	**Phase II** Coring for 70 wind turbines. Potential to impact geology on all, or portions of 60 acres associated with the construction and reconstruction of 13 miles of roads; 149 acres associated with wind turbine construction; and 35 acres/21 miles of underground collection system. Geologic hazard potential would be associated with 7 acres of total surface disturbance on slopes >20% and 33 acres on slopes from 12 – 20%. **Phase I and II** Coring impacts, potential impacts on geology, and geologic hazard potential – same as Alternative B1.				
Soils	No increased erosion or disturbance to soils would occur from the No Action Alternative. Natural erosion processes would continue to occur.	Construction activities would disturb soils on 699 acres in areas with medium or greater water erosion potential and 330 acres in areas with moderate or greater wind erosion potential. Major, long-term or permanent soil compaction would impact soils across 227 acres. Additional impacts on soils from construction in recently burned areas would occur across 135 acres. Undesirable soil mixing would occur on 84 acres.	**Phase I** Construction activities would disturb soils on 431 acres in areas with medium or greater water erosion potential and 255 acres in areas with moderate or greater wind erosion potential. Major, long-term or permanent soil compaction would impact soils across 166 acres. Additional impacts on soils from construction in recently burned areas would occur across 74 acres. Undesirable soil mixing would occur on 51 acres. O&M impacts would be the same as Alternative B1.	**Phase I** Construction activities would disturb soils on 485 acres in areas with medium or greater water erosion potential and 248 acres in areas with moderate or greater wind erosion potential. Major, long-term or permanent soil compaction would impact soils across 156 acres. Additional impacts on soils from construction in recently burned areas would occur across 21 acres. Undesirable soil mixing would occur on 48 acres. O&M impacts would be the same as Alternative B1.	**Phase I** Construction activities would disturb soils on 450 acres in areas with medium or greater water erosion potential and 189 acres in areas with moderate or greater wind erosion potential. Major, long-term or permanent soil compaction would impact soils across 178 acres. Additional impacts on soils from construction in recently burned areas would occur across 135 acres. Undesirable soil mixing would occur on 50 acres. O&M impacts would be the same as Alternative B1.	Construction activities would disturb soils on 632 acres in areas with medium or greater water erosion potential and 309 acres in areas with moderate or greater wind erosion potential. Major, long-term or permanent soil compaction would impact soils across 214 acres. Additional impacts on soils from construction in recently burned areas would occur across 135 acres. Undesirable soil mixing would occur on 72 acres. O&M would impact soils in localized areas along 80 miles of project roads.	Construction activities would disturb soils on 586 acres in areas with medium or greater water erosion potential and 286 acres in areas with moderate or greater wind erosion potential. Major, long-term or permanent soil compaction would impact soils across 188 acres. Additional impacts on soils from construction in recently burned areas would occur across 85 acres. Undesirable soil mixing would occur on 59 acres.	Construction activities would disturb soils on 545 acres in areas with medium or greater water erosion potential and 258 acres in areas with moderate or greater wind erosion potential. Major, long-term or permanent soil compaction would impact soils across 195 acres. Additional impacts on soils from construction in recently burned areas would occur across 131 acres. Undesirable soil mixing would occur on 71 acres.	Construction activities would disturb soils on 501 acres in areas with medium or greater water erosion potential and 227 acres in areas with moderate or greater wind erosion potential. Major, long-term or permanent soil compaction would impact soils across 169 acres. Additional impacts on soils from construction in recently burned areas would occur across 74 acres. Undesirable soil mixing would occur on 41 acres. O&M would impact soils in localized areas along 66 miles of project roads.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
Soils (continued)		O&M impacts would be the same as Alternative B1. Decommissioning impacts would be the same as Alternative B1.	**Phase II** Construction activities would disturb soils on 293 acres in areas with medium or greater water erosion potential and 89 acres in areas with moderate or greater wind erosion potential. Major, long-term or permanent soil compaction would impact soils across 69 acres. Undesirable soil mixing would occur on 33 acres. O&M would impact soils in localized areas along 20 miles of roads. **Phase I and II** Construction activities would disturb soils on 724 acres in areas with medium or greater water erosion potential and 344 acres in areas with moderate or greater wind erosion potential. Major, long-term or permanent soil compaction would impact soils across 235 acres. Additional impacts on soils from construction in recently burned areas would occur across 74 acres. Undesirable soil mixing would occur on 84 acres. O&M would impact soils in localized areas along 83 miles of roads. Decommissioning impacts would be the same as Alternative B1.	**Phase II** Construction activities would disturb soils on 239 acres in areas with medium or greater water erosion potential and 97 acres in areas with moderate or greater wind erosion potential. Major, long-term or permanent soil compaction would impact soils across 78 acres. Undesirable soil mixing would occur on 36 acres. O&M would impact soils in localized areas along 21 miles of roads. **Phase I and II** Construction activities would disturb soils on 724 acres in areas with medium or greater water erosion potential and 345 acres in areas with moderate or greater wind erosion potential. Major, long-term or permanent soil compaction would impact soils across 234 acres. Additional impacts on soils from construction in recently burned areas would occur across 21 acres. Undesirable soil mixing would occur on 84 acres. O&M would impact soils in localized areas along 83 miles of roads. Decommissioning impacts would be the same as Alternative B1.	**Phase II** Construction activities would disturb soils on 267 acres in areas with medium or greater water erosion potential & 152 acres in areas with moderate or greater wind erosion potential. Major, long-term or permanent soil compaction would impact soils across 58 acres. Undesirable soil mixing would occur on 35 acres. O&M would impact soils in localized areas along 13 miles of roads. **Phase I and II** Construction activities would disturb soils on 717 acres in areas with medium or greater water erosion potential and 341 acres in areas with moderate or greater wind erosion potential. Major, long-term or permanent soil compaction would impact soils across 236 acres. Additional impacts on soils from construction in recently burned areas would occur across 135 acres. Undesirable soil mixing would occur on 84 acres. O&M would impact soils in localized areas along 83 miles of roads. Decommissioning impacts would be the same as Alternative B1.	Decommissioning 59 miles of project roads and 152 turbines would result in short-term impacts on soils through increased erosion and soil loss; over the long-term, road removal and reclamation would limit or reduce soil erosion in localized areas.	O&M would impact soils in localized areas along 72 miles of project roads. Decommissioning 51 miles of project roads and 124 turbines would result in short-term impacts on soils through increased erosion and soil loss; over the long-term, road removal and reclamation would limit or reduce soil erosion in localized areas.	O&M would impact soils in localized areas along 76 miles of project roads. Decommissioning 55 miles of project roads and 120 turbines would result in short-term impacts on soils through increased erosion and soil loss; over the long-term, road removal and reclamation would limit or reduce soil erosion in localized areas.	Decommissioning 46 miles of project roads and 105 turbines would result in short-term impacts on soils through increased erosion and soil loss; over the long-term, road removal and reclamation would limit or reduce soil erosion in localized areas.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
Water Resources	Riparian and wetland vegetation, water quality, and hydrology would not be impacted from the No Action Alternative.	Construction: 296 acres of surface disturbance associated with 83 miles of roads, and 84 acres associated with 51 miles of underground collection system. Surface disturbance in riparian habitat conservation areas (RHCAs): 11.7 acres short-term, 6 acres long-term, and 2.4 acres permanent. 165 acres of surface disturbance in snowfields. Stream crossings: 20 new stream crossings by new roads and 14 existing stream crossings by reconstructed roads. Slopes > 20%: 27 acres of total surface disturbance. Slopes 12-20%: 93 acres of total surface disturbance. Burned areas: 135 acres of surface disturbance. O&M: Use of 83 miles of roads, road grading, and snow removal would result in indirect moderate change to riparian vegetation structure and major, long-term, adverse impacts on water quality and hydrology.	**Phase I** Construction: 202 acres of surface disturbance associated with 63 miles of roads and 51 acres associated with 35 miles of underground collection system. Surface disturbance in RHCAs: 8.2 acres short-term, 5.2 acres long-term surface, and 1.3 acres permanent. 82 acres of surface disturbance in snowfields. Stream crossings: 20 new stream crossings by new roads and 9 existing stream crossings by reconstructed roads. Slopes > 20%: 19 total acres of surface disturbance. Slopes 12-20%: 64 acres of total surface disturbance. Burned areas: 74 acres of surface disturbance. O&M: Impacts from use of 63 miles of roads. **Phase II** Construction: 94 acres of surface disturbance associated with 20 miles of roads and 33 acres associated with 15 miles of underground collection system. Surface disturbance in RHCAs: 5.2 acres short-term, 1 acre long-term, and 1.1 acres permanent. 83 acres of surface disturbance in snowfields.	**Phase I** Construction: 192 acres of surface disturbance associated with 62 miles of roads and 48 acres associated with 29 miles of underground collection system. Surface disturbance in RHCAs: 9.7 acres short-term, 5.0 acres long-term, and 2.4 acres permanent. 132 acres of surface disturbance in snowfields. Stream crossings: 19 new stream crossings by new roads and 14 existing stream crossings by reconstructed roads. Slopes > 20%: 18 acres of surface disturbance. Slopes 12-20%: 60 acres of surface disturbance. Burned areas: 114 acres of surface disturbance. O&M: Impacts from use of 62 miles of roads. **Phase II** Construction: 103 acres of surface disturbance associated with 21 miles of roads and 36 acres associated with 21 miles of underground collection system. Surface disturbance in RHCAs: 3.7 acres short-term, 1.2 acres long-term, and 0 acres of permanent. 36 acres of surface disturbance in snowfields.	**Phase I** Construction: 233 acres of surface disturbance associated with 70 miles of roads and 50 acres associated with 30 miles of underground collection system. Surface disturbance in RHCAs: 8.5 acres short-term, 5 acres long-term, and 2.3 acres permanent. 102 acres of surface disturbance in snowfields. Stream crossings: 19 new stream crossings by new roads and 13 existing stream crossings by reconstructed roads. Slopes > 20%: 20 acres of surface disturbance. Slopes 12-20%: 65 acres of surface disturbance. Burned areas: same as Alternative B1. O&M: Impacts from use of 70 miles of roads. **Phase II** Construction: 60 acres of surface disturbance associated with 13 miles of roads and 34 acres associated with 21 miles of underground collection system. Surface disturbance in RHCAs: 4.9 acres short-term, 1.3 acres long-term, and 0 acres permanent. 67 acres of surface disturbance in snowfields.	Construction: 280 acres of surface disturbance associated with 80 miles of roads and 72 acres associated with 44 miles of underground collection system. Surface disturbance in RHCAs: 10 acres short-term, 5.9 acres long-term, and 2.3 acres permanent. 163 acres of surface disturbance in snowfields. Stream crossings: 20 new stream crossings by new roads and 13 existing stream crossings by reconstructed roads. Slopes > 20%: 26 acres of surface disturbance. Slopes 12-20%: 86 acres of surface disturbance. Burned areas: same as Alternative B1. O&M: Impacts from use of 80 miles of roads. Decommissioning: 59 miles of road, 152 turbines and 44 miles of underground collection system would be decommissioned.	Construction: 240 of acres surface disturbance associated with 72 miles of roads and 59 acres associated with 36 miles of underground collection system. Surface disturbance in RHCAs: same as Alternative C. 160 acres of surface disturbance in snowfields. Stream crossings: same as Alternative C. Slopes > 20%: 22 acres of surface disturbance. Slopes 12-20%: 71 acres of surface disturbance. Burned areas: 86 acres of surface disturbance. O&M: Impacts from use of 72 miles of roads. Decommissioning: 51 miles of road, 124 turbines and 36 miles of underground collection system would be decommissioned.	Construction: 259 of acres surface disturbance associated with 76 miles of roads and 71 acres associated with 42 miles of underground collection system. Surface disturbance in RHCAs: 9.7 acres short-term, 5.7 acres long-term, and 2.3 acres permanent. 148 acres of surface disturbance in snowfields. Stream crossings: 18 new stream crossings by new roads and 13 existing stream crossings by reconstructed roads. Slopes > 20%: 22 acres of surface disturbance. Slopes 12-20%: 69 acres of surface disturbance. Burned areas: 131 acres of surface disturbance. O&M: Impacts from use of 76 miles of roads. Decommissioning: 55 miles of road, 120 turbines and 42 miles of underground collection system would be decommissioned.	Construction: 214 acres of surface disturbance associated with 66 miles of roads and 41 acres associated with 26 miles of underground collection system. Surface disturbance in RHCAs: 8.9 acres short-term, 5.7 acres long-term, and 2.3 acres permanent. 152 acres of surface disturbance in snowfields. Stream crossings: same as Alternative C. Slopes > 20%: 16 acres of surface disturbance. Slopes 12-20%: 57 acres of surface disturbance. Burned areas: 74 acres of surface disturbance. O&M: Impacts from use of 66 miles of roads. Decommissioning: 46 miles of road, 105 turbines and 26 miles of underground collection system would be decommissioned.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
Water Resources (continued)		Decommissioning: 62 miles of project roads, 170 wind turbine foundations, and 51 miles of underground collection system would be decommissioned. Short-term disturbance of wetland and riparian vegetation; decommissioning roads would reduce fragmentation. Similar impacts on water quality as construction. Adverse impacts on water quality would be minimized by design features.	Stream crossings: 0 new stream crossings by new roads and 5 existing stream crossings by reconstructed roads. Slopes > 20%: 7 acres of total surface disturbance. Slopes 12-20%: 30 acres of total surface disturbance. Burned areas: 62 acres of surface disturbance. O&M: Impacts from use of 20 miles of roads. **Phase I and II** Construction surface disturbance in RHCAs: 13.4 acres short-term, 6.2 acres long-term, and 2.4 acres permanent. Other impacts from construction and O&M: same as Alternative B1. Decommissioning: Impacts from surface disturbance would be the same as Alternative B1 but would be separated temporally.	Stream crossings: 1 new stream crossing by new roads and 0 existing stream crossings by reconstructed roads. Slopes > 20%: 10 acres of surface disturbance. Slopes 12-20%: 33 acres of surface disturbance. Burned areas: 21 acres of surface disturbance. O&M: Impacts from use of 21 miles of roads. **Phase I and II** Construction surface disturbance in RHCAs: Same as for Alternative B2a. Other impacts from construction and O&M: same as Alternative B1. Decommissioning: Impacts from surface disturbance would be the same as Alternative B1 but would be separated temporally.	Stream crossings: 1 new stream crossing by new roads and 1 existing stream crossing by reconstructed roads. Slopes > 20%: 7 acres of surface disturbance. Slopes 12-20%: 33 acres of surface disturbance. Burned areas: same as Alternative B1. O&M: Impacts from use of 13 miles of roads. **Phase I and II** Construction surface disturbance in RHCAs: Same as for Alternative B2a. Other impacts from construction and O&M: same as Alternative B1. Decommissioning: Impacts from surface disturbance would be the same as Alternative B1 but would be separated temporally.				

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
Noise	No noise impacts from the No Action Alternative.	Construction: Temporary major anticipated construction noise impact at Rock House Place. O&M: Temporary major anticipated operation noise impact at Rock House Place and temporary minor anticipated operation noise impact at Brown Bench Ranch. Decommissioning: anticipated temporary major noise impact at Rock House Place.	**Phase I** Construction: Temporary major anticipated construction noise impact at Rock House Place. O&M: Temporary major anticipated operation noise impact at Rock House Place and temporary minor anticipated operation noise impact at Brown Bench Ranch. **Phase II** Construction: No temporary anticipated construction noise impact. O&M: Temporary major anticipated operation noise impact at Rock House Place and temporary minor anticipated operation noise impact at Brown Bench Ranch. **Phase I and II** Noise impact during operation and decommissioning the same as Alternative B1. Construction noise separated out temporally due to phasing.	**Phase I** Construction: Temporary anticipated major construction noise impact at Rock House Place. O&M: Temporary anticipated major operation noise impact at Rock House Place. **Phase II** Construction: No temporary anticipated construction noise impact. O&M: Temporary major anticipated operation noise impact at Rock House Place and temporary minor anticipated operation noise impact at Brown Bench Ranch. **Phase I and II** Noise impact during operation and decommissioning the same as Alternative B1. Construction noise separated out temporally due to phasing.	**Phase I** Construction: No anticipated construction noise impact. O&M: Temporary anticipated minor operation noise impact at Browns Bench Ranch. **Phase II** Construction: Temporary anticipated major construction noise impact at Rock House Place. O&M: Temporary major anticipated operation noise impact at Rock House Place and temporary minor anticipated operation noise impact at Brown Bench Ranch. **Phase I and II** Noise impact during operation and decommissioning the same as Alternative B1. Construction noise separated out temporally due to phasing.	Construction: No anticipated construction noise impacts. O&M: Temporary anticipated minor operation noise impact at Browns Bench Ranch. Decommissioning: No anticipated decommissioning noise impacts.	Construction: No anticipated construction noise impacts. O&M: No anticipated operation noise impacts. Decommissioning: No anticipated decommissioning noise impacts.	Same as Alternative D.	Same as Alternative D.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
BIOLOGICAL									
Vegetation									
Upland Vegetation	No surface disturbance to upland vegetation groups would occur from the No Action Alternative. Existing trends in upland vegetation groups would continue.	Construction would remove a total of 810 acres of vegetation; 25 acres would be permanently removed from reconstruction of existing roads, 201 acres would be removed for the life of the project, and 583 acres would be revegetated after construction, resulting in a major change in vegetation composition. O&M activities would result in minor disturbance of vegetation from dust and increased risk of wildfire starts along the 83 miles of project roads. Decommissioning would have similar impacts as construction, but would reclaim areas that had project features and new roads, resulting in reduced fragmentation and restoration of long-term productivity.	**Phase I** Construction would remove a total of 536 acres of vegetation; 17 acres would be permanently removed from reconstruction of existing roads, 149 acres would be removed for the life of the project, and 370 acres would be revegetated after construction, resulting in a major change in vegetation composition. O&M activities would result in minor disturbance of vegetation from dust and increased risk of wildfire starts along the 63 miles of project roads. **Phase II** Construction would remove a total of 300 acres of vegetation; 9 acres would be permanently removed, 60 acres would be removed for the life of the project, and 232 acres would be revegetated after construction. **Phase I and II** Construction would remove a total of 836 acres of vegetation; 25 acres would be permanently removed, 209 acres would be removed for the life of the project, and 601 acres would be revegetated after construction. O&M and decommissioning would have the same impacts as Alternative B1.	**Phase I** Construction would remove a total of 523 acres of vegetation; 25 acres would be permanently removed from reconstruction of existing roads, 131 acres would be removed for the life of the project, and 366 acres would be revegetated after construction, resulting in a major change in vegetation composition. O&M activities would result in minor disturbance of vegetation from dust and increased risk of wildfire starts along the 62 miles of project roads. **Phase II** Construction would remove a total of 313 acres of vegetation; 0 acres would be permanently removed, 78 acres would be removed for the life of the project, and 234 acres would be revegetated after construction. **Phase I and II** Construction would remove a total of 835 acres of vegetation; 25 acres would be permanently removed, 209 acres would be removed for the life of the project, and 601 acres would be revegetated after construction. O&M and decommissioning would have the same impacts as Alternative B1.	**Phase I** Construction would remove a total of 562 acres of vegetation; 25 acres would be permanently removed from reconstruction of existing roads, 152 acres would be removed for the life of the project, and 384 acres would be revegetated after construction, resulting in a major change in vegetation composition. O&M activities would result in minor disturbance of vegetation from dust and increased risk of wildfire starts along the 70 miles of project roads. **Phase II** Construction would remove a total of 267 acres of vegetation; 1 acre would be permanently removed, 57 acres would be removed for the life of the project, and 209 acres would be revegetated after construction. **Phase I and II** Construction would remove a total of 828 acres of vegetation; 25 acres would be permanently removed, 209 acres would be removed for the life of the project, and 593 acres would be revegetated after construction. O&M and decommissioning would have the same impacts as Alternative B1.	Construction would remove a total of 744 acres of vegetation; 25 acres would be permanently removed from reconstruction of existing roads, 189 acres would be removed for the life of the project, and 530 acres would be revegetated after construction, resulting in a major change in vegetation composition. O&M activities would result in minor disturbance of vegetation from dust and increased risk of wildfire starts along the 80 miles of project roads. Decommissioning would have similar impacts as Alternative B1.	Construction would remove a total of 629 acres of vegetation; 25 acres would be permanently removed from reconstruction of existing roads, 162 acres would be removed for the life of the project, and 442 acres would be revegetated after construction, resulting in a major change in vegetation composition. O&M activities would result in minor disturbance of vegetation from dust and increased risk of wildfire starts along the 72 miles of project roads. Decommissioning would have similar impacts as Alternative B1.	Construction would remove a total of 655 acres of vegetation; 25 acres would be permanently removed from reconstruction of existing roads, 170 acres would be removed for the life of the project, and 459 acres would be revegetated after construction, resulting in a major change in vegetation composition. O&M activities would result in minor disturbance of vegetation from dust and increased risk of wildfire starts along the 76 miles of project roads. Decommissioning would have similar impacts as Alternative B1.	Construction would remove a total of 542 acres of vegetation; 25 acres would be permanently removed from reconstruction of existing roads, 144 acres would be removed for the life of the project, and 374 acres would be revegetated after construction, resulting in a major change in vegetation composition. O&M activities would result in minor disturbance of vegetation from dust and increased risk of wildfire starts along the 66 miles of project roads. Decommissioning would have similar impacts as Alternative B1.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
Noxious Weeds and Invasive Plants	No surface disturbance to upland vegetation groups would occur from the No Action Alternative. Existing trends in the establishment of noxious weeds and invasive plants would continue.	Construction surface disturbance on ~810 total acres would result in an increased potential for the establishment of noxious weeds and invasive plants. O&M activities, vehicle traffic, and surface disturbance, particularly along 83 miles of improved and existing roads, would indirectly increase opportunities for the establishment of noxious weeds and invasive plants. Decommissioning would have similar impacts as construction. Approximately 284 total acres would be disturbed during decommissioning, resulting in a major increased potential for noxious weeds and invasive plants to become established. Over the long-term, decommissioning and associated reclamation would reduce the risk of noxious weed and invasive plant establishment.	**Phase I** Construction surface disturbance on ~536 total acres would result in an increased potential for the establishment of noxious weeds and invasive plants. O&M activities, vehicle traffic, and surface disturbance, particularly along 63 miles of improved and existing roads, would indirectly increase opportunities for the establishment of noxious weeds and invasive plants. **Phase II** Construction surface disturbance on ~300 total acres would result in an increased potential for the establishment of noxious weeds and invasive plants. **Phase I and II** Construction surface disturbance on ~836 total acres would result in an increased potential for the establishment of noxious weeds and invasive plants. O&M and decommissioning would have the same impacts as Alternative B1.	**Phase I** Construction surface disturbance on ~523 total acres would result in an increased potential for the establishment of noxious weeds and invasive plants. O&M activities, vehicle traffic, and surface disturbance, particularly along 62 miles of improved and existing roads, would indirectly increase opportunities for the establishment of noxious weeds and invasive plants. **Phase II** Construction surface disturbance on ~313 total acres would result in an increased potential for the establishment of noxious weeds and invasive plants. **Phase I and II** Construction surface disturbance on ~835 total acres would result in an increased potential for the establishment of noxious weeds and invasive plants. O&M and decommissioning would have the same impacts as Alternative B1.	**Phase I** Construction surface disturbance on ~562 total acres would result in an increased potential for the establishment of noxious weeds and invasive plants. O&M activities, vehicle traffic, and surface disturbance, particularly along 70 miles of improved and existing roads, would indirectly increase opportunities for the establishment of noxious weeds and invasive plants. **Phase II** Construction surface disturbance on ~267 total acres would result in an increased potential for the establishment of noxious weeds and invasive plants. **Phase I and II** Construction surface disturbance on ~828 total acres would result in an increased potential for the establishment of noxious weeds and invasive plants. O&M and decommissioning would have the same impacts as Alternative B1.	Construction surface disturbance on ~744 total acres would result in an increased potential for the establishment of noxious weeds and invasive plants. O&M activities, vehicle traffic, and surface disturbance, particularly along 80 miles of improved and existing roads, would indirectly increase opportunities for the establishment of noxious weeds and invasive plants. Decommissioning would have similar impacts as construction. Approximately 262 total acres would be disturbed during decommissioning, resulting in a major increased potential for noxious weeds and invasive plants to become established. Over the long-term, decommissioning and associated reclamation would reduce the risk of noxious weed and invasive plant establishment.	Construction surface disturbance on ~629 total acres would result in an increased potential for the establishment of noxious weeds and invasive plants. O&M activities, vehicle traffic, and surface disturbance, particularly along 72 miles of improved and existing roads, would indirectly increase opportunities for the establishment of noxious weeds and invasive plants. Decommissioning would have similar impacts as construction. Approximately 221 total acres would be disturbed during decommissioning, resulting in a major increased potential for noxious weeds and invasive plants to become established. Over the long-term, decommissioning and associated reclamation would reduce the risk of noxious weed and invasive plant establishment.	Construction surface disturbance on ~655 total acres would result in an increased potential for the establishment of noxious weeds and invasive plants. O&M activities, vehicle traffic, and surface disturbance, particularly along 76 miles of improved and existing roads, would indirectly increase opportunities for the establishment of noxious weeds and invasive plants. Decommissioning would have similar impacts as construction. Approximately 241 total acres would be disturbed during decommissioning, resulting in a major increased potential for noxious weeds and invasive plants to become established. Over the long-term, decommissioning and associated reclamation would reduce the risk of noxious weed and invasive plant establishment.	Construction surface disturbance on ~542 total acres would result in an increased potential for the establishment of noxious weeds and invasive plants. Vehicle traffic and surface disturbance, particularly along 66 miles of improved and existing roads, would indirectly increase opportunities for the establishment of noxious weeds and invasive plants. Decommissioning would have similar impacts as construction. Approximately 185 total acres would be disturbed during decommissioning, resulting in a major increased potential for noxious weeds and invasive plants to become established. Over the long-term, decommissioning and associated reclamation would reduce the risk of noxious weed and invasive plant establishment.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
Special Status Plants	No new impacts on special status plant (SSP) species and their potential habitat from the No Action Alternative. Existing disturbances on SSPs and their habitat would continue.	Construction would remove 11 acres of slickspot peppergrass potential habitat and 1 acre of known occupied Newberry's milkvetch habitat. In addition, construction would remove between 11 and 665 acres of potential habitat for six different SSPs, depending on the species. O&M activities would result in minor disturbance of SSP occupied and potential habitat from dust and increased risk of wildfire. Project roads travel through between 1 and 54 miles of SSP potential habitat. Two miles of project road would go through potential slickspot peppergrass habitat. Decommissioning would have similar impacts as construction and would result in increased early seral vegetation in the analysis area. Long-term, reclaimed areas could have reduced fragmentation of habitat, restored long-term productivity, and possible SSP recolonization.	**Phase I** Construction impacts on slickspot peppergrass potential habitat and Newberry's milkvetch known occupied habitat would be the same as Alternative B1. In addition, construction would remove between 9 and 439 acres of potential habitat for six different SSPs, depending on the species. O&M activities would result in minor disturbance of SSP occupied and potential habitat from dust and increased risk of wildfire. Project roads travel through between 1 and 40 miles of SSP potential habitat. Two miles of project road would go through slickspot peppergrass potential habitat. **Phase II** Construction would remove between 3 and 232 acres of potential habitat for six different SSPs, depending on the species. **Phase I and II** Construction of Phase I and Phase II would remove between 12 and 671 acres of potential habitat for six different SSPs, depending on the species. O&M: same impacts as Alternative B1. Decommissioning: same impacts as Alternative B1.	**Phase I** Construction impacts on slickspot peppergrass potential habitat would be the same as Alternative B1. Less than 0.5 acres of known occupied Newberry's milkvetch habitat would be removed. In addition, construction would remove between 9 and 468 acres of potential habitat for six different SSPs, depending on the species. O&M activities would result in minor disturbance of SSP occupied and potential habitat from dust and increased risk of wildfire. Project roads travel through between 1 and 41 miles of SSP potential habitat. Two miles of project road would go through slickspot peppergrass potential habitat. **Phase II** Construction would remove between 3 and 203 acres of potential habitat for six different SSPs, depending on the species. **Phase I and II** Construction of Phase I and Phase II would be the same as Alternative B2a. O&M: same impacts as Alternative B1. Decommissioning: same impacts as Alternative B1.	**Phase I** Construction impacts on slickspot peppergrass potential habitat and known occupied Newberry's milkvetch would be the same as Alternative B1. In addition, construction would remove between 9 and 436 acres of potential habitat for six different SSPs, depending on the species. O&M activities would result in minor disturbance of SSP occupied and potential habitat from dust and increased risk of wildfire. Project roads travel through between 1 and 43 miles of SSP potential habitat. Two miles of project road would go through slickspot peppergrass potential habitat. **Phase II** Construction would remove between 3 and 231 acres of potential habitat for six different SSPs, depending on the species. **Phase I and II** Construction of Phase I and Phase II would remove between 12 and 668 acres of potential habitat for six different SSPs, depending on the species. O&M: same impacts as Alternative B1. Decommissioning: same impacts as Alternative B1.	Construction impacts on slickspot peppergrass potential habitat and Newberry's milkvetch known occupied habitat would be the same as Alternative B1. In addition, construction would remove between 11 and 599 acres of potential habitat for six different SSPs, depending on the species. O&M activities would result in minor disturbance of SSP occupied and potential habitat from dust and increased risk of wildfire. Project roads travel through between 1 and 51 miles of SSP potential habitat. Two miles of project road would go through slickspot peppergrass potential habitat. Decommissioning: similar impacts as Alternative B1.	Construction impacts on slickspot peppergrass potential habitat and Newberry's milkvetch known occupied habitat would be the same as Alternative B1. In addition, construction would remove between 11 and 520 acres of potential habitat for six different SSPs, depending on the species. O&M activities would result in minor disturbance of SSP occupied and potential habitat from dust and increased risk of wildfire. Project roads travel through between 1 and 46 miles of SSP potential habitat. Two miles of project road would go through slickspot peppergrass potential habitat. Decommissioning: similar impacts as Alternative B1.	Construction impacts on slickspot peppergrass potential habitat would be the same as Alternative B1. Less than 0.5 acres of known occupied Newberry's milkvetch would be removed. In addition, construction would remove between 11 and 557 acres of potential habitat for six different SSPs, depending on the species. O&M activities would result in minor disturbance of SSP occupied and potential habitat from dust and increased risk of wildfire. Project roads travel through between 1 and 49 miles of SSP potential habitat. Two miles of project road would go through slickspot peppergrass potential habitat. Decommissioning: similar impacts as Alternative B1.	Construction impacts on slickspot peppergrass potential habitat would be the same as Alternative B1. No known occupied Newberry's milkvetch would be removed. In addition, construction would remove between 11 and 457 acres of potential habitat for six different SSPs, depending on the species. O&M activities would result in minor disturbance of SSP occupied and potential habitat from dust and increased risk of wildfire. Project roads travel through between 1 and 42 miles of SSP potential habitat. Two miles of project road would go through slickspot peppergrass potential habitat. Decommissioning: similar impacts as Alternative B1.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
Fish and Wildlife									
Migratory Birds									
Raptors (including special status raptor species)	No impacts on raptor nests or raptor fatalities would occur from the No Action Alternative.	Project activities would be within 0.33 miles of 4 red-tailed hawks and within 1.0 miles of 2 golden eagle nests. 720 raptor fatalities are estimated over the 30-year right-of-way (ROW) grant. Collisions with wind turbines could have adverse impacts on locally sensitive raptor populations and regionally declining populations of golden eagles. An amendment to the 1987 Jarbidge Resource Management Plan (RMP) would lift seasonal restriction buffers around raptor nests. This would allow all project activities to occur within close proximity to nesting raptors, which could lead to nest abandonment or failure.	**Phase I** Project activities would be within 0.33 miles of three red-tailed hawks and within 1.0 miles of two golden eagle nests. 140 raptor fatalities are estimated through year 10 of the ROW grant. 280 raptor fatalities are estimated from year 10 to year 30 of the ROW grant. **Phase II** Project activities would be within 0.33 miles of four red-tailed hawks. Adds an estimated 200 additional raptor fatalities from year 10 to year 30 of the ROW Grant. **Phase I and II** Impacts on nesting raptors are the same as Alternative B1. 620 raptor fatalities are estimated over the 30-year ROW grant. RMP amendments would be the same as Alternative B1.	**Phase I** Project activities would be within 0.33 miles of 3 red-tailed hawks and within 1.0 miles of 2 golden eagle nests. Raptor fatalities would be the same as Alternative B2a. **Phase II** Project activities would be within 0.33 miles of 4 red-tailed hawks and within 1.0 miles of 1 golden eagle nest. Raptor fatalities would be the same as Alternative B2a. **Phase I and II** Impacts on nesting raptors are the same as Alternative B1. An amendment to the 1987 Jarbidge RMP would lift seasonal restriction buffers around raptor nests if certain exception criteria are met. Allows BLM to make decisions on a case-by case basis.	**Phase I** Project activities would be within 0.33 miles of 3 red-tailed hawks and within 1.0 miles of 1 golden eagle nest. Raptor fatalities would be the same as Alternative B2a. **Phase II** Project activities would be within 0.33 miles of 2 red-tailed hawks and within 1.0 miles of 1 golden eagle nest. Raptor fatalities would be the same as Alternative B2a. **Phase I and II** Impacts on nesting raptors are the same as Alternative B1. RMP amendments would have the same impact as described for Alternative B2b.	Project activities would be within 0.33 miles of 4 red-tailed hawks and within 1.0 miles of 2 golden eagle nests. 630 raptor fatalities are estimated over the 30-year ROW grant. RMP amendments would have the same impact as described for Alternative B2b.	Project activities would be within 0.33 miles of 3 red-tailed hawks and within 1.0 miles of 2 golden eagle nests. 510 raptor fatalities are estimated over the 30-year ROW grant. RMP amendments would have the same impact as described for Alternative B2b.	Project activities are within 0.33 miles of 4 red-tailed hawks and within 1.0 miles of 2 golden eagle nests. 510 raptor fatalities are estimated over the 30-year ROW grant. No RMP amendments. Current guidance would be followed regarding seasonal restrictions and provide the greatest protection to nesting raptors.	Project activities would be within 0.33 miles of 3 red-tailed hawks and within 1.0 miles of 2 golden eagle nest. 450 raptor fatalities are estimated over the 30-year ROW grant. RMP amendments would have the same impact as described for Alternative B2b.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
Passerines and Other Birds (including special status species)	No impacts on passerines and other birds would occur from the No Action Alternative.	An estimated 30,000 passerine fatalities would occur over 30-year ROW grant. 830 acres of passerine habitat would be removed. 9,661 acres of passerine habitat would be avoided. Construction, O&M, and decommissioning could displace sensitive sagebrush obligate passerines and fragment habitats.	**Phase I** 6,000 passerine fatalities are estimated through year 10 of the ROW grant. 12,000 passerine fatalities are estimated from year 10 through year 30 of the ROW grant. 549 acres of habitat would be removed. 7,896 acres of habitat would be avoided. **Phase II** Adds an estimated 8,400 additional passerine fatalities from year 10 to year 30 of the ROW grant. An additional 281 acres of habitat would be removed. An additional 1,765 acres of habitat would be avoided. **Phase I and II** An estimated 3,600 fewer fatalities would occur and the same acres of habitat would be removed and avoided as Alternative B1.	**Phase I** Estimated passerine fatalities are the same as Alternative B2a. 540 acres of habitat would be removed. 7,491 acres of habitat would be avoided. **Phase II** Estimated passerine fatalities are the same as Alternative B2a. An additional 290 acres of habitat would be removed. An additional 2,170 acres of habitat would be avoided. **Phase I and II** Same as Alternative B2a.	**Phase I** Estimated passerine fatalities are the same as Alternative B2a. 578 acres of habitat would be removed. 7,535 acres of habitat would be avoided. **Phase II** Estimated passerine fatalities are the same as Alternative B2a. An additional 252 acres of habitat would be removed. An additional 2,126 acres of habitat would be avoided. **Phase I and II** Same as Alternative B2a.	An estimated 27,000 passerine fatalities would occur over the 30-year ROW grant. 762 acres of habitat would be removed. Approximately 9,129 acres of habitat would be avoided.	An estimated 22,320 passerine fatalities would occur over the 30-year ROW grant. 647 acres of habitat would be removed. Approximately 8,449 acres of habitat would be avoided.	An estimated 22,000 passerine fatalities would occur over the 30-year ROW grant. 673 acres of habitat would be removed. Approximately 8,311 acres of habitat would be avoided.	An estimated 19,000 passerine fatalities would occur over the 30-year ROW grant. 545 acres of habitat would be removed. Approximately 7,829 acres of habitat would be avoided.
Special Status Animals									
Greater sage-grouse	No new impacts on sage-grouse from the No Action Alternative. Existing impacts would continue.	Habitat Removed: Key - 586 acres; R1 (Restoration Type I) – 194 acres. Removal of habitat would fragment available habitat and reduce cover and food needed by sage-grouse during the spring, summer, and fall, and to a lesser extent the winter. Habitat Avoided: Key – 125,056 acres; R1 – 70,276; More than 76% of	**Phase I** Habitat Removed: Key – 389 acres; R1 – 118 acres. Habitat Avoided: Key – 109,268 acres; R1 – 66,956 acres. Number of leks within 4-mile radius – 23.	**Phase I** Habitat Removed: Key – 466 acres; R1 – 49 acres. Habitat Avoided: Key – 123,050; R1 – 69,250. Number of leks within 4-mile radius – 22.	**Phase I** Habitat Removed: Key – 350 acres; R1 – 189 acres. Habitat Avoided: Key – 121,539; R1 – 69,345. Number of leks within 4-mile radius – 24.	Habitat Removed: Key - 519 acres; R1 - Same as Alternative B1. Habitat Avoided: Key - 124,444 acres; R1 - 69,580 acres. More than 76% of available winter habitat. Number of leks within 4-mile radius – 24. RMP amendments – same as Alt B2b.	Habitat Removed: Key - 482 acres; R1 - 136 acres. Habitat Avoided: Key - 123,690 acres; R1 - 69,579; More than 74% of available winter habitat. Number of leks within 4-mile radius – 23. RMP amendments – same as Alt B2b.	Habitat Removed: Key - 463 acres; R1 - 175 acres. Habitat Avoided: Key - 123,240 acres; R1 - 69,488; More than 74% of available winter habitat. Number of leks within 4-mile radius – 22.	Habitat Removed: Key - 425 acres; R1 - 110 acres. Habitat Avoided: Key - 123,075 acres; R1 - 69,340; More than 73% of available winter habitat. Number of leks within 4-mile radius – 22. RMP amendments – same as Alt B2b.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
Greater sage-grouse (continued)		available winter habitat. Presence of tall structures would cause avoidance of sage-grouse habitat (assumes a 4-mile avoidance buffer). Number of leks within 4-mile radius – 24 Noise and activity from construction, O&M, and decommissioning would disturb use of leks within 4 miles. An amendment to the 1987 Jarbidge RMP would reduce protection to sage-grouse and their habitats by removing seasonal restrictions and spatial buffers for sage-grouse habitat and leks during construction, O&M, and decommissioning. Project construction disturbance and presence and operation of infrastructure would cause avoidance of otherwise suitable habitat which would fragment habitat and prevent seasonal movements into and through the project area. This could lead to long-term adverse effects on sage-grouse populations.	**Phase II** Habitat Removed: Key – 208 acres R1 – 87 acres Habitat Avoided: Key – 15,788 acres R1 – 3,320 acres Number of leks within 4-mile radius -16 (15 overlap Phase I leks) **Phase I and II** Habitat Removed: Key – 597 acres R1 – 205 acres Habitat avoided same as Alt B1 Number of leks within 4-mile radius - 24 RMP amendments would impact sage-grouse the same as Alternative B1. Project would cause avoidance of habitat, prevent seasonal movements, and impact populations as under Alternative B1.	**Phase II** Habitat Removed: Key – 131 acres R1 – 156 acres Habitat Avoided: Key – 2,006 acres R1 – 1,026 acres Number of leks within 4-mile radius - 14 (12 overlap Phase I leks) **Phase I and II** Habitat removed same as Alt B2a Habitat avoided same as Alt B1 Number of leks within 4-mile radius - 24 An amendment to the 1987 Jarbidge RMP would retain seasonal restrictions and spatial buffers for sage-grouse habitat and leks during construction and decommissioning, but exceptions would be granted if certain criteria are met. This would likely result in fewer impacts on sage-grouse than the amendment proposed under Alternative B1. Project would cause avoidance of habitat, prevent seasonal movements, and impact populations as under Alternative B1.	**Phase II** Habitat Removed: Key – 244 acres R1 – 16 acres Habitat Avoided: Key – 3,517 acres R1 – 931 acres Number of leks within 4-mile radius - 15 (all overlap Phase I leks) **Phase I and II** Habitat removed same as Alt B2a Habitat avoided same as Alt B1 Number of leks within 4-mile radius - 24 RMP amendments – same as Alt B2b. Project would cause avoidance of habitat, prevent seasonal movements, and impact populations as under Alternative B1.	Project would cause avoidance of habitat, prevent seasonal movements, and impact populations as under Alternative B1.	Project would cause avoidance of habitat, prevent seasonal movements, and impact populations as under Alternative B1.	No RMP amendments. Provides the most protection of seasonal sage-grouse habitat use during construction, decommissioning, and major maintenance activities. Project would cause avoidance of habitat, prevent seasonal movements, and impact populations as under Alternative B1.	Project would cause avoidance of habitat, prevent seasonal movements, and impact populations as under Alternative B1.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
Sharp-tailed Grouse	No impacts on sharp-tailed grouse would occur from the No Action Alternative.	Construction would remove 68 acres of winter habitat. Up to 18,470 acres of winter habitat would be avoided. Avoidance of seasonally important habitats could hinder efforts to reintroduce sharp-tailed grouse to the Shoshone Basin and House Creek areas. An amendment to the 1987 Jarbidge RMP would reduce protection to sharp-tailed grouse and their habitats during construction, O&M, and decommissioning. No leks would be impacted.	**Phase I** Construction would remove 57 acres of winter habitat. Up to 11,440 acres of winter habitat would be avoided. **Phase II** Construction would remove 11 acres of winter habitat. Up to 7,040 acres of winter habitat would be avoided. **Phase I and II** Habitat removed and avoided would be the same as Alternative B1. RMP amendments would impact sharp-tailed grouse the same as described in Alternative B1. No leks would be impacted.	**Phase I** Construction would remove 34 acres of winter habitat. Up to 18,320 acres of winter habitat would be avoided. **Phase II** Construction would remove 34 acres of winter habitat. Up to 150 acres of winter habitat would be avoided. **Phase I and II** Habitat removed and avoided would be the same as Alternative B1. The special status animals and crucial wildlife habitat stipulations in the 1987 Jarbidge RMP would be retained for construction and decommissioning, but some exceptions to the stipulations could be granted through an RMP amendment. This would likely result in fewer impacts on sharp-tailed grouse than the amendment proposed under Alternative B1. No leks would be impacted.	**Phase I** Construction would remove 41 acres of winter habitat. Up to 17,495 acres of winter habitat would be avoided. **Phase II** Construction would remove 27 acres of winter habitat. Up to 975 acres of winter habitat would be avoided. **Phase I and II** Habitat removed and avoided would be the same as Alternative B1. RMP amendments would impact sharp-tailed grouse the same as described in Alternative B2b. No leks would be impacted.	Impacts on winter habitat would be the same as described for Alternative B1. RMP amendments would impact sharp-tailed grouse the same as described in Alternative B2b. No leks would be impacted.	Construction would remove 52 acres of winter habitat. Habitat avoided would be the same as Alternative B1. RMP amendments would impact sharp-tailed grouse the same as described in Alternative B2b. No leks would be impacted.	Construction would remove 33 acres of winter habitat. Habitat avoided would be the same as Alternative B1. Adherence to all RMP stipulations would provide the greatest protection to seasonal habitats. No leks would be impacted.	Construction would remove 36 acres of winter habitat. Habitat avoided would be the same as Alternative B1. RMP amendments would impact sharp-tailed grouse the same as described in Alternative B2b. No leks would be impacted.
Bats	No wind energy bat fatalities would occur from the No Action Alternative.	78 to 836 bat fatalities per year; 2,346 to 25,092 fatalities over 30 yrs.	**Phase I**: 46 to 492 bat fatalities per year. **Phase II:** 32 to 344 fatalities per year. **Phase I and II:** 46 to 492 fatalities per year for first 10 years; 78 to 836 per year for the last 20 years. 2,024 to 21,648 fatalities over 30 years.	Same as Alternative B2a.	Same as Alternative B2a.	70 to 748 bat fatalities per year; 2,098 to 22,435 fatalities over 30 years.	57 to 610 bat fatalities per year; 1,711 to 18,302 fatalities over 30 years.	55 to 590 bat fatalities per year; 1,656 to 17,712 fatalities over 30 years.	48 to 517 bat fatalities per year; 1,449 to 15,498 fatalities over 30 years.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
Small Mammals	No impacts on special status small mammals would occur from the No Action Alternative.	190 acres of pygmy rabbit habitat, 741 acres of ground squirrel habitat, 20 acres of Pahranagat Valley montane vole habitat, and 810 acres of Preble's shrew habitat would be removed.	**Phase I** 62 acres of pygmy rabbit habitat, 476 acres of ground squirrel habitat, 15 acres of Pahranagat Valley montane vole habitat, and 536 acres of Preble's shrew habitat would be removed. **Phase II** 128 acres of pygmy rabbit habitat, 265 acres of ground squirrel habitat, 5 acres of Pahranagat Valley montane vole habitat, and 274 acres of Preble's shrew habitat would be removed. **Phase I and II** Same as Alternative B1.	**Phase I** 134 acres of pygmy rabbit habitat, 488 acres of ground squirrel habitat, 17 acres of Pahranagat Valley montane vole habitat, and 523 acres of Preble's shrew habitat would be removed. **Phase II** 66 acres of pygmy rabbit habitat, 253 acres of ground squirrel habitat, 3 acres of Pahranagat Valley montane vole habitat, and 287 acres of Preble's shrew habitat would be removed. **Phase I and II** Same as Alternative B1.	**Phase I** 167 acres of pygmy rabbit habitat, 520 acres of ground squirrel habitat, 16 acres of Pahranagat Valley montane vole habitat, and 562 acres of Preble's shrew habitat would be removed. **Phase II** 23 acres of pygmy rabbit habitat, 221 acres of ground squirrel habitat, 4 acres of Pahranagat Valley montane vole habitat, and 248 acres of Preble's shrew habitat would be removed. **Phase I and II** Same as Alternative B1.	185 acres of pygmy rabbit habitat, 675 acres of ground squirrel habitat, 18 acres of Pahranagat Valley montane vole habitat, and 744 acres of Preble's shrew habitat would be removed.	185 acres of pygmy rabbit habitat, 576 acres of ground squirrel habitat, 18 acres of Pahranagat Valley montane vole habitat, and 629 acres of Preble's shrew habitat would be removed.	188 acres of pygmy rabbit habitat, 621 acres of ground squirrel habitat, 18 acres of Pahranagat Valley montane vole habitat, and 655acres of Preble's shrew habitat would be removed.	176 acres of pygmy rabbit habitat, 505 acres of ground squirrel habitat, 17 acres of Pahranagat Valley montane vole habitat, and 542 acres of Preble's shrew habitat would be removed.
Reptiles	No impacts on special status reptiles would occur from the No Action Alternative.	741 acres of short-horned lizard habitat would be removed.	**Phase I** 476 acres of short-horned lizard habitat would be removed. **Phase II** 265 acres of short-horned lizard habitat would be removed. **Phase I and II** Same as Alternative B1.	**Phase I** 488 acres of short-horned lizard habitat would be removed. **Phase II** 253 acres of short-horned lizard habitat would be removed. **Phase I and II** Same as Alternative B1.	**Phase I** 520 acres of short-horned lizard habitat would be removed. **Phase II** 221 acres of short-horned lizard habitat would be removed. **Phase I and II** Same as Alternative B1.	675 acres of short-horned lizard habitat would be removed.	576 acres of short-horned lizard habitat would be removed.	621 acres of short-horned lizard habitat would be removed.	505 acres of short-horned lizard habitat would be removed.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
Amphibians	No impacts on special status amphibians would occur from the No Action Alternative.	20 acres of RHCAs would be removed. 34 new or reconstructed stream crossings would occur. An amendment to the 1987 Jarbidge RMP would allow occupancy within 500 feet of reservoirs, ponds, lakes, streams, wetlands, marshes, and riparian areas, which could adversely impact amphibian habitats.	**Phase I** 15 acres of RHCAs would be removed. 29 new or reconstructed stream crossings would occur. **Phase II** 7 acres of RHCAs would be removed. 5 new or reconstructed stream crossings would occur. **Phase I and II** 22 acres of RHCAs would be removed. 34 new or reconstructed stream crossings. RMP amendments are the same as Alternative B1.	**Phase I** 17 acres of RHCAs would be removed. 33 new or reconstructed stream crossings would occur. **Phase II** 5 acres of RHCAs would be removed. 1 new or reconstructed stream crossing would occur. **Phase I and II** 22 acres of RHCAs would be removed. 34 new or reconstructed stream crossings. An amendment to the 1987 Jarbidge RMP would allow occupancy within 500 feet of reservoirs, ponds, lakes, streams, wetlands, marshes, and riparian areas if exception criteria are met. This would likely result in fewer impacts than the amendment proposed under Alternative B1.	**Phase I** 16 acres of RHCAs would be removed. 22 new or reconstructed stream crossings would occur. **Phase II** 6 acres of RHCAs would be removed. 2 new or reconstructed stream crossings would occur. **Phase I and II** 22 acres of RHCAs would be removed. 34 new or reconstructed stream crossings. RMP amendments are the same as Alternative B2b.	18 acres of RHCAs would be removed. 33 new or reconstructed stream crossings would occur. RMP amendments are the same as Alternative B2b.	Same as Alternative C.	18 acres of RHCAs would be removed. 31 new or reconstructed stream crossings would occur. Adherence to all RMP stipulations would prevent occupancy within 500 feet of reservoirs, ponds, lakes, streams, wetlands, marshes, and riparian areas which would reduce the potential for impacts on amphibian species and their habitat.	17 acres of RHCAs would be removed. 33 new or reconstructed stream crossings would occur. RMP amendments are the same as Alternative B2b.
Redband Trout	No impacts on redband trout from the No Action Alternative.	New road crossings of trout-bearing streams and tributaries: 6 (1/5). New road miles in trout RHCAs: 0.7. Acres of disturbance in trout RHCAs: 2.8. An amendment to the 1987 Jarbidge RMP would lift the no occupancy restriction within 500 feet of redband trout-bearing streams. This could affect trout habitat in N. Fork Salmon Falls Creek and Cedar Creek.	**Phase I** New road crossings of trout-bearing streams and tributaries: 5. New road miles in trout RHCAs: 0.5. Acres of disturbance in trout RHCAs: 1.4. **Phase II** New road crossings of trout-bearing streams and tributaries: 1. New road miles in trout RHCAs: 0.2. Acres of disturbance in trout RHCAs: 1.4.	**Phase I** New road crossings of trout-bearing streams and tributaries: 5. New road miles in trout RHCAs: 0.5. Acres of disturbance in trout RHCAs: 1.4. **Phase II** New road crossings of trout-bearing streams and tributaries: 1. New road miles in trout RHCAs: 0.2. Acres of disturbance in trout RHCAs: 1.4.	**Phase I** New road crossings of trout-bearing streams and tributaries: 6. New road miles in trout RHCAs: 0.7. Acres of disturbance in trout RHCAs: 2.8. **Phase II** New road crossings of trout-bearing streams and tributaries: 0. New road miles in trout RHCAs: 0. Acres of disturbance in trout RHCAs: 0.	New road crossings of trout-bearing streams and tributaries: 6 (1/5). New road miles in trout RHCAs: 0.7. Acres of disturbance in trout RHCAs: 2.8. RMP amendments: same as Alternative B2b.	New road crossings of trout-bearing streams and tributaries: 6 (1/5). New road miles in trout RHCAs: 0.7. Acres of disturbance in trout RHCAs: 2.8. RMP amendments: same as Alternative B2b.	New road crossings of trout-bearing streams and tributaries: 4 (1/3). New road miles in trout RHCAs: 0.3. Acres disturbance in trout RHCAs: 2.8. RMP amendments: none. This would reduce the potential for sediment delivery to North Fork Salmon Falls Creek and Cedar Creek.	New road crossings of trout-bearing streams and tributaries: 6 (1/5). New road miles in trout RHCAs: 0.7. Acres of disturbance in trout RHCAs: 2.8. RMP amendments: same as Alternative B2b.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2e	Alternative C	Alternative D	Alternative E	Alternative F
Redband Trout (continued)			**Phase I and II** New road crossings of trout-bearing streams and tributaries: 6 New road miles in trout RHCAs: 0.7 Acres of disturbance in trout RHCAs: 2.8 RMP amendments: same as Alternative B1.	**Phase I and II** New road crossings of trout-bearing streams and tributaries: 6 New road miles in trout RHCAs: 0.7 Acres of disturbance in trout RHCAs: 2.8 An amendment to the 1987 Jarbidge RMP would retain stream restrictions described for Alternative B1 with exceptions granted. Could reduce affect on trout habitat over Alternative B1.	**Phase I and II** New road crossings of trout-bearing streams and tributaries: 6 New road miles in trout RHCAs: 0.7 Acres of disturbance in trout RHCAs: 2.8 RMP amendments: same as Alternative B2b.				
Big Game									
Mule Deer	No impacts on mule deer would occur from the No Action Alternative.	Road densities would increase from 2.9 miles per square mile to 4.1 miles per square mile. 116,770 acres of mule deer habitat would be avoided. Of this, 54,400 acres are considered winter habitat. An amendment to the 1987 Jarbidge RMP would lift seasonal restrictions within sensitive seasonal habitats that would allow major construction and maintenance to occur year-round. This could result in adverse impacts on mule deer by causing energy expenditure and physiological stress during resource limited times of year such as winter and fawning periods.	**Phase I** Road densities would increase from 2.9 miles per square mile to 3.9 miles per square mile. 101,390 acres of mule deer habitat would be avoided. Of this, 54,240 acres are considered winter habitat. **Phase II** Road densities would increase by another 0.2 mile per square mile. An additional 15,380 acres of mule deer habitat would be avoided. Of this, 160 acres are considered winter habitat. **Phase I and II** Same as Alternative B1. RMP amendments would be the same as Alternative B1.	**Phase I** Road densities would increase from 2.9 to 3.7 miles per square mile. 92,980 acres of mule deer habitat would be avoided. Of this, 50,800 acres are considered winter habitat. **Phase II** Road densities would increase by another 0.4 mile per square mile. An additional 23,790 acres of mule deer habitat would be avoided. Of this, 3,600 acres are considered winter habitat. **Phase I and II** Same as Alternative B1. An amendment to the 1987 Jarbidge RMP would allow exceptions to the seasonal restrictions for construction and decommissioning if exception criteria are met. This could reduce disturbance in important seasonal habitat compared to the proposed Alternative B1 amendment.	**Phase I** Road densities would increase the same as Alternative B2a. 112,650 acres of mule deer habitat would be avoided. Of this, 50,280 acres are considered winter habitat. **Phase II** Road densities would increase the same as Alternative B2a. An additional 4,120 acres of mule deer habitat would be avoided, all of which are considered winter habitat. **Phase I and II** Same as Alternative B1. RMP amendments would be the same as Alternative B2b.	Road densities would increase the same as Alternative B1. 116,400 acres of mule deer habitat would be avoided. Of this, 54,000 acres are considered winter habitat. RMP amendments would be the same as Alternative B2b.	Road densities would increase from 2.9 to 3.9 miles per square mile. 101,950 acres of mule deer habitat would be avoided. Of this, 53,450 acres are considered winter habitat. RMP amendments would be the same as Alternative B2b.	Road densities would increase from 2.9 to 4.0 mile per square mile. 114,750 acres of mule deer habitat would be avoided. Of this, 52,480 acres are considered winter habitat. No RMP amendments. Current guidance would be followed regarding seasonal restrictions. This could help to avoid disturbing mule deer herds during sensitive times of year.	Road densities would increase from 2.9 to 3.8 mile per square mile. 95,870 acres of mule deer habitat would be avoided. Of this, 49,600 acres is considered winter habitat. RMP amendments would be the same as Alternative B2b.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
Elk	No impacts on elk would occur from the No Action Alternative.	86,290 acres of elk habitat would be avoided. An amendment to the 1987 Jarbidge RMP would lift seasonal restrictions within sensitive seasonal habitats that would allow major construction and maintenance to occur year-round. This could result in adverse impacts on elk, as described for mule deer.	**Phase I** 70,690 acres of elk habitat would be avoided. **Phase II** An additional 15,330 acres of elk habitat would be avoided. **Phase I and II** Same as Alternative B1. RMP amendments would be the same as Alternative B1.	**Phase I** 62,500 acres of elk habitat would be avoided. **Phase II** An additional 23,790 acres of elk habitat would be avoided. **Phase I and II** Same as Alternative B1. An amendment to the 1987 Jarbidge RMP would allow exceptions to the seasonal restrictions for construction and decommissioning if exception criteria are met. This could reduce disturbance in important seasonal habitat compared to the proposed Alternative B1 amendment.	**Phase I** 83,880 acres of elk habitat would be avoided. **Phase II** An additional 2,410 acres of elk habitat would be avoided. **Phase I and II** Same as Alternative B1. RMP amendments would be the same as Alternative B2b.	Same as Alternative B1. RMP amendments would be the same as Alternative B2b	71,850 acres of elk habitat would be avoided. RMP amendments would be the same as Alternative B2b	85,090 acres of elk habitat would be avoided. No RMP amendments. Current guidance would be followed regarding seasonal restrictions. This could help to avoid disturbing elk herds during sensitive times of year.	65,760 acres of elk habitat would be avoided. RMP amendments would be the same as Alternative B2b
American Pronghorn	No impacts on pronghorn would occur from the No Action Alternative.	111,170 acres of pronghorn habitat would be avoided. Of this, 38,490 acres are considered winter habitat. An amendment to the 1987 Jarbidge RMP would lift seasonal restrictions within sensitive seasonal habitats that would allow major construction and maintenance to occur year-round. This could result in adverse impacts on pronghorn, as described for mule deer.	**Phase I** 95,790 acres of pronghorn habitat would be avoided. Of this, 38,380 acres are considered winter habitat. **Phase II** An additional 15,380 acres of pronghorn habitat would be avoided. Of this, 110 acres are considered winter habitat. **Phase I and II** Same as Alternative B1. RMP amendments would be the same as Alternative B1.	**Phase I** 87,380 acres of pronghorn habitat would be avoided. Of this, 38,890 acres are considered winter habitat. **Phase II** An additional 23,790 acres of pronghorn habitat would be avoided. Of this, 4,610 acres are considered winter habitat. **Phase I and II** Same as Alternative B1. An amendment to the 1987 Jarbidge RMP would allow exceptions to the seasonal restrictions for construction and decommissioning if exception criteria are met. This could reduce disturbance in important seasonal habitat compared to the proposed Alternative B1 amendment.	**Phase I** 107,060 acres of pronghorn habitat would be avoided. Of this, 35,260 acres are considered winter habitat. **Phase II** An additional 4,110 acres of pronghorn habitat would be avoided. Of this, 3,230 acres are considered winter habitat. **Phase I and II** Same as Alternative B1. RMP amendments would be the same as Alternative B2b.	110,800 acres of pronghorn habitat would be avoided. Of this, 38,130 acres are considered winter habitat. RMP amendments would be the same as Alternative B2b.	96,360 acres of pronghorn habitat would be avoided. Of this, 35,595 acres are considered winter habitat. RMP amendments would be the same as Alternative B2b.	109,160 acres of pronghorn habitat would be avoided. Of this, 36,600 acres are considered winter habitat. No RMP amendments. Current guidance would be followed regarding seasonal restrictions. This could help to avoid disturbing pronghorn herds during sensitive times of year.	90,275 acres of pronghorn habitat would be avoided. Of this, 32,955 acres are considered winter habitat. RMP amendments would be the same as Alternative B2b.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
SOCIAL AND ECONOMIC									
Historic and Cultural Resources	No potential for impacts from construction, O&M, and decommissioning from the No Action Alternative.	Project activities have high potential for direct impacts on an estimated 205 prehistoric, historic, and/or multiple component sites (sites). These resources include 12 Class I, 65 Class II, 28 Class III, 21 Class IV, 67 Class V, 6 Class VI, and 6 of an unspecified class. The Class I and Class VI sites are likely not eligible for listing on the National Register of Historic Places (NRHP). Moderate to high potential for indirect impacts associated with increased access. At least 111 acres of known archaeological sites would be directly impacted by the project footprint. An estimated total of 226 acres would be impacted for all sites.	**Phase I** Project activities have high potential for direct impacts on an estimated 109 sites; including 5 Class I, 42 Class II, 11 Class III, 13 Class IV, 28 Class V, 5 Class VI, and 5 of an unspecified class. The Class I and Class VI sites are likely not eligible for listing on the NRHP. Moderate to high potential for indirect impacts associated with increased access. **Phase II** Project activities have potential for high direct impacts on an estimated 89 sites. These resources include 6 Class I, 21 Class II, 15 Class III, 7 Class IV, 36 Class V, 2 Class VI, and 2 of an unspecified class. The Class I and VI sites are likely not eligible for listing on the NRHP. Moderate to high pot. for indirect impacts assoc. with increased access. **Phase I and II** Project activities have high potential for direct impacts on an estimated 206 sites. At least 113 acres of known arch. sites would be directly impacted by the project footprint. An estimated total of 233 acres would be impacted for all sites.	**Phase I** Project activities have high potential for direct and indirect impacts on an estimated 169 sites; including 12 Class I, 61 Class II, 26 Class III, 19 Class IV, 37 Class V, 7 Class VI, and 7 of an unspecified class. The Class I and Class VI sites are likely not eligible for listing on the NRHP. Moderate to high potential for indirect impacts associated with increased access. **Phase II** Project activities have potential for high direct impacts on an estimated 48 sites. These resources include 4 Class II, 4 Class III, 4 Class IV, 32 Class V, and 4 of an unspecified class. The Class VI sites are likely not eligible for listing on the NRHP. Moderate to high potential for indirect impacts associated with increased access. **Phase I and II** Project activities have high potential for direct impacts on an estimated 217 sites. At least 113 acres of known arch. sites would be directly impacted by the project footprint. An est. total of 226 acres would be impacted for all sites.	**Phase I** Project activities have high potential for direct and indirect impacts on an estimated 166 sites; including 9 Class I, 42 Class II, 27 Class III, 13 Class IV, 70 Class V, and 5 of an unspecified class. Based on their limited data potential, the Class I sites are likely not eligible for listing on the NRHP. Moderate to high potential for indirect impacts assoc. with increased access. **Phase II** Project activities have high potential for direct and indirect impacts on an estimated 49 sites. These resources include 3 Class I, 21 Class II, 3 Class III, 9 Class IV, 9 Class V, and 4 Class VI. The Class I and Class VI sites are likely not eligible for listing on the NRHP. Moderate to high potential for indirect impacts associated with increased access. **Phase I and II** Project activities have high potential for direct impacts on 215 sites. At least 111 acres of known arch. sites would be directly impacted by the project footprint. An est. total of 226 acres would be impacted for all sites.	Project activities have high potential for direct impacts on an estimated 199 sites. These resources include 12 Class I, 62 Class II, 28 Class III, 18 Class IV, 69 Class V, 4 Class VI, and 6 of an unspecified class. Based on their limited data potential, the Class I and Class VI sites are likely not eligible for listing on the NRHP. Moderate to high potential for indirect impacts associated with increased access. At least 110 acres of known archaeological sites would be directly impacted by the project footprint. An estimated total of 226 acres would be impacted for all sites.	Project activities have high potential for direct impacts on an estimated 190 sites. These resources include 12 Class I, 61 Class II, 27 Class III, 19 Class IV, 61 Class V, 4 Class VI, and 6 of an unspecified class. Based on their limited data potential, the Class I and Class VI sites are likely not eligible for listing on the NRHP. Moderate potential for indirect impacts associated with increased access. At least 73 acres of known archaeological sites would be directly impacted by the project footprint. An estimated total of 149 acres would be impacted for all sites.	Project activities have high potential for direct impact to an estimated 201 sites. These resources include 12 Class I, 62 Class II, 29 Class III, 20 Class IV, 68 Class V, 4 Class VI, and 6 of an unspecified class. Based on their limited data potential, the Class I and Class VI sites are likely not eligible for listing on the NRHP. Moderate potential for indirect impacts associated with increased access. At least 97 acres of known archaeological sites would be directly impacted by the project footprint. An estimated total of 198 acres would be impacted for all sites.	Project activities have moderate to high potential for direct impact to an estimated 182 sites. These resources include 13 Class I, 37 Class II, 26 Class III, 16 Class IV, 61 Class V, 4 Class VI, and 5 of an unspecified class. Based on their limited data potential, the Class I sites are likely not eligible for listing on the NRHP. Moderate potential for indirect impacts associated with increased access. At least 52 acres of known archaeological sites would be directly impacted by the project footprint. An estimated total of 105 acres would be impacted for all sites.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
Tribal Treaty Rights and Interests	No direct impacts on sites or locations of tribal concern would occur from the No Action Alternative. Indirect effects due to continued access, recreation, looting of archaeological sites, and similar actions would continue at the current rate.	High potential for direct and indirect impacts on sites and locations of interest to Native Americans from construction activities, the presence of workers, and increased access to the project area, particularly impacts on the physical evidence of past use of the cultural landscape (artifacts, cultural features, and archaeological sites) important to tribal peoples.	**Phase I** There would be a reduced potential for direct and indirect impacts compared to Alternative B1. **Phase II** Same as Alternative B1 **Phase I and II** High potential for direct and indirect impacts on sites and locations of interest to Native Americans from construction activities, the presence of workers, and increased access to the project area, particularly impacts on the physical evidence of past use of the cultural landscape important to tribal peoples.	**Phase I** Same as Alternative B2a. **Phase II** Same as Alternative B1 **Phase I and II** Same as Alternative B2a.	**Phase I** Same as Alternative B2a. **Phase II** Same as Alternative B1 **Phase I and II** Same as Alternative B2a.	Slightly decreased potential for direct and indirect impacts compared to Alternative B1.	Reduced potential for direct and indirect impacts compared to Alternative B1.	Same as Alternative D.	Lowest potential for direct and indirect impacts compared to all action alternatives.
Economic Conditions	No new construction from the No Action Alternative. No new construction jobs. No long-term operating impacts. No new long-term operating jobs. No additional tax revenue to state or local governments. No lease payments to U.S. government.	**Phase I and II** $737 million total economic impact from construction. 749 total temp jobs from construction. $11.3 million total annual operating impacts. 46 long-term jobs. $62.7 million present value of all tax revenue streams.	**Phase I and II** $645.0 million total economic impact from construction (present value). 749 total temp jobs from construction, but spread out over a longer time period than Alternative B1 due to project phasing; 446 in Phase I and 303 in Phase II. $11.3 million total annual operating impacts; operating costs of Phase II delayed. 46 long-term jobs. $55.0 million present value of all tax revenue streams due to the delay of building Phase II.	**Phase I and II** $645.0 million total economic impact from construction (present value). 749 total temp jobs from construction but spread out over a longer time period than Alternative B1 due to project phasing; 446 in Phase I and 303 in Phase II. $11.3 million total annual operating impacts; operating costs of Phase II delayed. 46 long-term jobs. $50.0 million present value of all tax revenue streams due to the delay of building Phase II.	**Phase I and II** Same as Alternative B2a.	**Phase I and II** $639.0 million total economic impact from construction. 696 total temp jobs from construction. $10.0 million total annual operating impacts. 43 long-term jobs. $57.6 million present value of all tax revenue streams.	**Phase I and II** $532.5 million total economic impact from construction. 591 total temp jobs from construction. $8.5 million total annual operating impacts. 36 long-term jobs. $36.4 million present value of all tax revenue streams.	**Phase I and II** $518.0 million total economic impact from construction. 586 total temp jobs from construction. $7.8 million total annual operating impacts. 36 long-term jobs. $47.3 million present value of all tax revenue streams.	**Phase I and II** $459.6 million total economic impact from construction. 510 total temp jobs from construction. $6.9 million total annual operating impacts. 27 long-term jobs. $34.3 million present value of all tax revenue streams.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
Visual Resources	No new impacts on visual resources from the No Action Alternative. Current impacts would continue. No plan amendments for the 1987 Jarbidge RMP.	Overall, construction and operation of the project would result in short- and long-term contrast in form, line, color, and texture from all viewer positions. Strong contrast would be perceived from the Monument Springs Road, Salmon Falls Creek, and Southern Primitive Road Network viewsheds, and weak contrast would be perceived from the US-93 viewshed. 44 – 170 turbines would be visible from 1 or more of 12 Key Observation Points (KOPs). An amendment to the 1987 Jarbidge RMP would reclassify 3,298 acres of VRM Class II lands, and 9,871 acres of VRM Class III lands.	**Phase I** The level of contrast perceived from each viewshed would be the same as that described for Alternative B1. 31 – 100 turbines would be visible from 1 or more of 12 KOPs. An amendment to the 1987 Jarbidge RMP would reclassify VRM Class II and Class III lands as described for Alternative B1. **Phase II** Same as described for Alternative B1. **Phase I + Phase II** Visual resource impacts would be the same as for Alternative B1.	**Phase I** Strong contrast would be perceived from Monument Springs Road and Salmon Falls Creek viewsheds. Weak Contrast would be perceived from the Southern Primitive Road Network and US-93 viewsheds. 29 – 100 turbines would be visible from 1 or more of 12 KOPs. An amendment to the 1987 Jarbidge RMP would reclassify VRM Class II and Class III lands as described for Alternative B1. **Phase II** Same as described for Alternative B1. **Phase I + Phase II** Visual resource impacts would be the same as for Alternative B1.	**Phase I** Strong contrast perceived from Monument Springs Road and Southern Primitive Road Network viewsheds. Moderate contrast would be perceived from the Salmon Falls Creek viewshed. Weak Contrast would be perceived from the US-93 viewshed. 27 – 100 turbines would be visible from 1 or more of 12 KOPs. An amendment to the 1987 Jarbidge RMP would reclassify VRM Class II and Class III lands as described for Alternative B1. **Phase II** Same as described for Alternative B1. **Phase I + Phase II** Visual resource impacts would be the same as for Alternative B1.	Strong contrast would be perceived from Monument Springs Road, Salmon Falls Creek, and Southern Primitive Road Network viewsheds. Weak contrast would be perceived from the US-93 viewshed. 26 – 152 turbines would be visible from 1 or more of 12 KOPs. An amendment to the 1987 Jarbidge RMP would reclassify 3,298 acres of VRM Class II lands, and 7,911 acres of VRM Class III lands.	Strong contrast would be perceived from Monument Springs Road and Salmon Falls Creek viewsheds. Weak contrast would be perceived from the Southern Primitive Road Network and US-93 viewsheds. 26 – 124 turbines would be visible from 1 or more of 12 KOPs. An amendment to the 1987 Jarbidge RMP would reclassify 2,358 acres of VRM Class II lands, and 7,652 acres of VRM Class III lands.	Strong contrast would be perceived from Monument Springs Road and Southern Primitive Road Network viewsheds. Moderate contrast would be perceived from Salmon Falls Creek viewshed. Weak contrast would be perceived from US-93 viewshed. 17 – 120 turbines would be visible from 1 or more of 12 KOPs. No amendments to the 1987 Jarbidge RMP would be considered under this alternative.	Strong contrast would be perceived from Monument Springs Road and Salmon Falls Creek viewsheds. Weak contrast would be perceived from the Southern Primitive Road Network and US-93 viewshed. 26 – 105 turbines would be visible from 1 or more of 12 KOPs. An amendment to the 1987 Jarbidge RMP would reclassify 1,420 acres of VRM Class II lands, and 6,394 acres of VRM Class III lands.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
Transportation and Access	No new impacts on transportation and access from the No Action Alternative. Cross-country motorized vehicle use and limited access would continue in the project area.	Construction of 62 miles of new road and reconstruction of 21 miles of existing roads would result in moderate, long-term impacts from increased year-round access to the area. Traffic from 15,130 truck trips would result in short-term impacts by causing local traffic delays. O&M: Traffic would have no measurable increase. Major maintenance would have short-term traffic delays. Decommissioning 62 miles of roads would have moderate, long-term impacts by reducing access to the project area.	**Phase I** Construction of 49 miles of new road and reconstruction of 14 miles of existing roads would result in moderate, long-term impacts from increased year-round access to the area. Traffic from 8,900 truck trips would result in short-term impacts by causing local traffic delays. **Phase II** Construction of 13 miles of new road and reconstruction of 7 miles of existing roads would result in moderate, long-term impacts from increased year-round access to the area. Traffic from 6,230 truck trips would result in short-term impacts by causing local traffic delays. **Phase I and II** Impacts would be the same as Alternative B1 but would vary temporally.	**Phase I** Construction of 41 miles of new road and reconstruction of 21 miles of existing roads would result in moderate, long-term impacts from increased year-round access to the area. Traffic from 8,900 truck trips would result in short-term impacts by causing local traffic delays. **Phase II** Construction of 21 miles of new road with no reconstruction of existing roads would result in moderate, long-term impacts from increased year-round access to the area. Traffic from 6,230 truck trips would result in short-term impacts by causing local traffic delays. **Phase I and II** Impacts would be the same as Alternative B1 but would vary temporally.	**Phase I** Construction of 50 miles of new road and reconstruction of 20 miles of existing roads would result in moderate, long-term impacts from increased year-round access to the area. Traffic from 8,900 truck trips would result in short-term impacts by causing local traffic delays. **Phase II** Construction of 12 miles of new road and reconstruction of 1 mile of existing roads would result in moderate, long-term impacts from increased year-round access to the area. Traffic from 6,230 truck trips would result in short-term impacts by causing local traffic delays. **Phase I and II** Impacts would be the same as Alternative B1 but would vary temporally.	Construction of 59 miles of new road and reconstruction of 20 miles of existing roads would result in moderate, long-term impacts from increased year-round access to the area. Traffic from 13,528 truck trips would result in short-term impacts by causing local traffic delays. O&M: Same as Alternative B1. Decommissioning 59 miles of roads would have moderate, long-term impacts by reducing access to the project area.	Construction of 51 miles of new road and reconstruction of 20 miles of existing roads would result in moderate, long-term impacts from increased year-round access to the area. Traffic from 11,036 truck trips would result in short-term impacts by causing local traffic delays. O&M: Same as Alternative B1. Decommissioning 51 miles of roads would have moderate, long-term impacts by reducing access to the project area.	Construction of 55 miles of new road and reconstruction of 21 miles of existing roads would result in moderate, long-term impacts from increased year-round access to the area. Traffic from 10,680 truck trips would result in short-term impacts by causing local traffic delays. O&M: Same as Alternative B1. Decommissioning 55 miles of roads would have moderate, long-term impacts by reducing access to the project area.	Construction of 46 miles of new road and reconstruction of 20 miles of existing roads would result in moderate, long-term impacts from increased year-round access to the area. Traffic from 9,345 truck trips would result in short-term impacts by causing local traffic delays. O&M: Same as Alternative B1. Decommissioning 46 miles of roads would have moderate, long-term impacts by reducing access to the project area.
Public Health and Safety	No new impacts on public health and safety from the No Action Alternative.	Impacts could result from physical hazards of all three project stages for the placement of 170 turbines with 15,130 truck trips. Impacts from 83 miles of new and reconstructed roads would allow safer travel with faster emergency access to the area.	**Phase I** Impacts would be related to the placement of 100 turbines with 8,900truck trips (for both construction and decommissioning activities) and 63 miles of new or reconstructed roads. **Phase II** Impacts would be related to the placement of 70 turbines with 6,230 truck trips (for both construction and decommissioning activities) and 20 miles of new or reconstructed roads. **Phase I and II** Impacts would be the same as Alternative B1 but would vary temporally.	**Phase I** Impacts would be related to the placement of 100 turbines with 8,900 truck trips (for both construction and decommissioning activities) and 62 miles of new or reconstructed roads. **Phase II** Impacts would be related to the placement of 70 turbines with 6,230 truck trips (for both construction and decommissioning activities) and 21 miles of new or reconstructed roads. **Phase I and II** Impacts would be the same as Alternative B1 but would vary temporally.	**Phase I** Impacts would be related to the placement of 100 turbines with 8,900 truck trips (for both construction and decommissioning activities) and 70 miles of new or reconstructed roads. **Phase II** Impacts would be related to the placement of 70 turbines with 6,230 truck trips (for both construction and decommissioning activities) and 13 miles of new or reconstructed roads. **Phase I and II** Impacts would be the same as Alternative B1 but would vary temporally.	Impacts would be related to the placement of 152 turbines with 13,528 truck trips (for both construction and decommissioning activities) and 80 miles of new or reconstructed roads.	Impacts would be related to the placement of 124 turbines with 11,036 truck trips (for both construction and decommissioning activities) and 72 miles of new or reconstructed roads.	Impacts would be related to the placement of 120 turbines with 10,680 truck trips (for both construction and decommissioning activities) and 76 miles of new or reconstructed roads.	Impacts would be related to the placement of 105 turbines with 9,345 truck trips (for both construction and decommissioning activities) and 66 miles of new or reconstructed roads.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
Hazardous Materials and Petroleum Products	No new impacts on hazardous materials and petroleum products from the No Action Alternative. Impacts related to current access to the area and opportunity for illegal dumping or accidental petroleum product releases from vehicles would continue.	Impacts would be related to the placement of 170 wind turbines and from 83 miles of new and reconstructed roads.	**Phase I** Impacts would be related to the placement of 100 wind turbines and from 63 miles of new and reconstructed roads. **Phase II** Impacts would be related to the placement of 70 wind turbines and from 20 miles of new and reconstructed roads. **Phase I and II** Impacts would be the same as Alternative B1 but would vary temporally.	**Phase I** Impacts would be related to the placement of 100 wind turbines and from 62 miles of new and reconstructed roads. **Phase II** Impacts would be related to the placement of 70 wind turbines and from 21 miles of new and reconstructed roads. **Phase I and II** Impacts would be the same as Alternative B1 but would vary temporally.	**Phase I** Impacts would be related to the placement of 100 wind turbines and from 70 miles of new and reconstructed roads. **Phase II** Impacts would be related to the placement of 70 wind turbines and from 13 miles of new and reconstructed roads. **Phase I and II** Impacts would be the same as Alternative B1 but would vary temporally.	Impacts would be related to the placement of 152 wind turbines and from 80 miles of new and reconstructed roads.	Impacts would be related to the placement of 124 wind turbines and from 72 miles of new and reconstructed roads.	Impacts would be related to the placement of 120 wind turbines and from 76 miles of new and reconstructed roads.	Impacts would be related to the placement of 105 wind turbines and from 66 miles of new and reconstructed roads.
Special Designations	Special designations would not be impacted from the No Action Alternative. Rocky Canyon Creek would continue to be eligible for inclusion in the Wild and Scenic River System for its free-flowing condition and wildlife values.	The closest turbine and project road would be located approximately 0.4 miles away from Rocky Canyon Creek. Surface disturbance associated with construction, O&M, and decommissioning could indirectly result in sedimentation to Rocky Canyon Creek. This could impact the outstandingly remarkable free-flowing value of Rocky Canyon Creek. The noise created by vehicle traffic and the wind turbines could indirectly impact the outstandingly remarkable wildlife values of the creek.	**Phase I** Surface disturbance would not occur close enough to impact Rocky Canyon Creek. **Phase II** Surface disturbance associated with construction, O&M, and decommissioning could indirectly result in sedimentation to Rocky Canyon Creek. This could impact the outstandingly remarkable free-flowing value of Rocky Canyon Creek. The noise created by vehicle traffic and the wind turbines could indirectly impact the outstandingly remarkable wildlife values of the creek. **Phase I and II** Impacts would be the same as Alternative B1 but with temporal differences.	**Phase I** Same as Phase I of Alternative B2a. **Phase II** Same as Phase II of Alternative B2a. **Phase I and II** Impacts would be the same as Alternative B1 but with temporal differences.	**Phase I** Surface disturbance associated with construction, O&M, and decommissioning could indirectly result in sedimentation to Rocky Canyon Creek. This could impact the outstandingly remarkable free-flowing value of Rocky Canyon Creek. The noise created by vehicle traffic and the wind turbines could indirectly impact the outstandingly remarkable wildlife values of the creek. **Phase II** Surface disturbance would not occur close enough to impact Rocky Canyon Creek. **Phase I and II** Impacts would be the same as Alternative B1 but with temporal differences.	Similar to Alternative B1, the closest turbine and project road would be located approximately 0.4 miles away from Rocky Canyon Creek, but fewer turbines and project roads could result in fewer impacts.	Similar to Alternative B1, the closest turbine and project road would be located approximately 0.4 miles away from Rocky Canyon Creek, but fewer turbines and project roads could result in fewer impacts.	Similar to Alternative B1, the closest turbine and project road would be located approximately 0.4 miles away from Rocky Canyon Creek, but fewer turbines and project roads could result in fewer impacts.	Similar to Alternative B1, the closest turbine and project road would be located approximately 0.4 miles away from Rocky Canyon Creek, but fewer turbines and project roads could result in fewer impacts.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
Lands with Wilderness Characteristics	Black Canyon and Corral Creek lands with wilderness characteristics would not be impacted from the No Action Alternative.	Wilderness characteristics would diminish within a small, localized portion of Black Canyon. Wilderness characteristics would diminish throughout a large portion of Corral Creek.	**Phase I** Wilderness characteristics would not be affected within the Black Canyon area. Wilderness characteristics would diminish within a large portion of Corral Creek. **Phase II** Wilderness characteristics would diminish within a small, localized portion of Black Canyon. No additional impacts on wilderness characteristics would occur within Corral Creek. **Phase I and II** Impacts would be the same as Alternative B1 but with temporal differences.	**Phase I** Wilderness characteristics would diminish within a small, localized portion of Black Canyon. Wilderness characteristics would diminish within a large portion of Corral Creek. **Phase II** No additional impacts on wilderness characteristics would occur within Black Canyon and Corral Creek. **Phase I and II** Impacts would be the same as Alternative B1 but with temporal differences.	**Phase I** There would be negligible impacts on wilderness characteristics within Black Canyon and Corral Creek. **Phase II** Wilderness characteristics would diminish within a small, localized portion of Black Canyon. Wilderness characteristics would diminish within a large portion of Corral Creek. **Phase I and II** Impacts would be the same as Alternative B1 but with temporal differences.	Wilderness characteristics would not diminish within Black Canyon. Impacts would be the same as Alternative A. Wilderness characteristics would diminish throughout a large portion of Corral Creek.	Same as Alternative C.	Wilderness characteristics would diminish within a small, localized portion of Black Canyon. Wilderness characteristics would diminish within a small, localized portion of Corral Creek.	Same as Alternative C.
Fire and Fuels Management	No new impacts on fire and fuels management from the No Action Alternative.	Minor short-term impact on fire regime condition class, long-term minor increase in the potential for human-caused fires during life of project, minor long-term impacts on fire management (fuel treatment, fire suppression, etc.) and fire size. Increase in the cost of fire suppression. 202 acres impacted in the long-term.	Minor short-term impact on fire regime condition class twice during two separate construction phases, long-term minor increase in the potential for human-caused fires during life of project, minor long-term impacts on fire management (fuel treatment, fire suppression, etc.) and fire size. Increase in the cost of fire suppression. 209 acres impacted in the long-term.	Similar to Alternative B2a. 209 acres impacted in the long-term.	Similar to Alternative B2a. 210 acres impacted in the long-term.	Similar to Alternative B1. 189 acres impacted in the long-term.	Similar to Alternative B1. 163 acres impacted in the long-term.	Similar to Alternative B1. 170 acres impacted in the long-term.	Similar to Alternative B1. This alternative would have the least amount of turbines constructed and would impact the smallest number of acres for the construction of turbine access roads and other facilities. This would translate to the smallest impact on fire and fuels management. 144 acres impacted in the long-term.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
LAND USE									
Recreation	Recreation Setting Characteristics (RSC) would remain unchanged from the No Action Alternative. Current conditions: physical RSC predominantly in a middle country setting (21,029 acres) and front Country (10,970 acres) setting. A small portion of lands classified as back country setting (1,690 acres). Social RSC (non-hunting season) predominantly in a primitive setting (22,719 acres), and back country setting (10,970 acres). Administrative RSC in a back country setting.	Physical RSC predominantly in a front country setting (37,873 acres) with a smaller amount of land in a middle country setting (634 acres). Social RSC (non-hunting season) predominantly in a middle country setting (37,873 acres) with a smaller amount of land in a back country setting (634 aces). Potential change in amount, type, and seasonality of recreational use in and around the project area.	**Phase I** Physical RSC predominantly in a front country setting (29,197 acres), with a smaller amount of land in a middle country setting (634 acres). Social RSC (non-hunting season) predominantly in a middle country setting (29,197 acres) with a smaller amount of land in a back country setting (634 aces). **Phase II** An additional 8,677 acres of the physical RSC in a front country setting. An additional 8,677 acres of the social RSC in a middle country setting. **Phase I and II** Same as Alternative B1.	**Phase I** Physical RSC predominantly in a front country setting (32,773 acres), with a smaller amount of land in a middle country setting (634 acres). Social RSC (non-hunting season) predominantly in a middle country setting (32,773 acres) with a smaller amount of land in a back country setting (634 aces). **Phase II** An additional 5,100 acres of the physical RSC in a front country setting. An additional 5,100 acres of the social RSC in a middle country setting. **Phase I and II** Same as Alternative B1.	**Phase I** Physical RSC predominantly in a front country setting (35,191 acres), with a smaller amount of land in a middle country setting (634 acres). Social RSC (non-hunting season) predominantly in a middle country setting (35,191 acres) with a smaller amount of land in a back country setting (634 aces). **Phase II** An additional 2,682 acres of the physical RSC in a front country setting. An additional 2,682 acres of the social RSC in a middle country setting. **Phase I and II** Same as Alternative B1.	Physical RSC predominantly in a front country setting (37,869 acres), with a smaller amount of land in a middle country setting (637 acres). Social RSC (non-hunting season) predominantly in a middle country setting (37,869 acres) with a smaller amount of land in a back country setting (637 aces). Potential change in amount, type, and seasonality of recreational use in and around the project area.	Physical RSC predominantly in a front country setting (37,672 acres), with a smaller amount of land in a middle country setting (835 acres). Social RSC (non-hunting season) predominantly in a middle country setting (37,671 acres) with a smaller amount of land in a back country setting (835 aces). Potential change in amount, type, and seasonality of recreational use in and around the project area.	Physical RSC predominantly in a front country setting (37,654 acres), with a smaller amount of land in a middle country setting (853 acres). Social RSC (non-hunting season) predominantly in a middle country setting (37,654 acres) with a smaller amount of land in a back country setting (853 aces). Potential change in amount, type, and seasonality of recreational use in and around the project area.	Physical RSC predominantly in a front country setting (37,586 acres), with a smaller amount of land in a middle country setting (921 acres). Social RSC (non-hunting season) predominantly in a middle country setting (37,586 acres) with a smaller amount of land in a back country setting (921 aces). Potential change in amount, type, and seasonality of recreational use in and around the project area.

Table 2.15-1. Summary Comparison of Resource Impacts for All Alternatives (continued).

RESOURCE	Alternative A	Alternative B1	Alternative B2a	Alternative B2b	Alternative B2c	Alternative C	Alternative D	Alternative E	Alternative F
Livestock Grazing	No new impacts on livestock grazing from the No Action Alternative. Livestock use and operation and management would continue under existing conditions.	Construction would disturb 812 acres, reducing forage availability in localized areas, and result in a short-term loss of 62 Animal Unit Months (AUMs), a long-term loss of 21 AUMs, and a permanent loss of 3 AUMs. O&M would result in minor impacts on livestock grazing. Decommissioning and reclamation would restore forage production on 202 acres.	**Phase I** Construction would disturb 536 acres, reducing forage availability in localized areas, and result in a short-term loss of 39 AUMs, a long-term loss of 16 AUMs, and a permanent loss of 2 AUMs. **Phase II** Construction would disturb 301 acres, reducing forage availability in localized areas, and result in a short-term loss of 24 AUMs, a long-term loss of 6 AUMs, and a permanent loss of 1 AUM. **Phase I and II** Impacts of construction would result in a negligible increase in total AUMs compared to Alternative B1 (2); permanent loss would be the same. Impacts of O&M and decommissioning would be the same as Alternative B1.	**Phase I** Construction would disturb 523 acres, reducing forage availability in localized areas, and result in a short-term loss of 38 AUMs, a long-term loss of 14 AUMs, and a permanent loss of 3 AUMs. **Phase II** Construction would disturb 313 acres, reducing forage availability in localized areas, and result in a short-term loss of 25 AUMs and a long-term loss of 8 AUMs. **Phase I and II** Impacts of construction would result in a negligible increase in total AUMs compared to Alternative B1 (2); permanent loss would be the same. Impacts of O&M and decommissioning would be the same as Alternative B1.	**Phase II** Construction would disturb 564 acres, reducing forage availability in localized areas, and result in a short-term loss of 41 AUMs, a long-term loss of 16 AUMs, and a permanent loss of 3 AUMs. **Phase II** Construction would disturb 267 acres, reducing forage availability in localized areas, and result in a short-term loss of 22 AUMs and a long-term loss of 6 AUMs. **Phase I and II** Impacts of construction would result in a negligible increase in total AUMs compared to Alternative B1 (2); permanent loss would be the same. Impacts of O&M and decommissioning would be the same as Alternative B1.	Construction would disturb 745 acres, reducing forage availability in localized areas, and result in a short-term loss of 56 AUMs, a long-term loss of 20 AUMs, and a permanent loss of 3 AUMs. O&M would result in minor impacts on livestock grazing. Decommissioning and reclamation would restore forage production on 189 acres.	Construction would disturb 631 acres, reducing forage availability in localized areas, and result in a short-term loss of 47 AUMs, a long-term loss of 17 AUMs, and a permanent loss of 3 AUMs. O&M would result in minor impacts on livestock grazing. Decommissioning and reclamation would restore forage production on 163 acres.	Construction would disturb 656 acres, reducing forage availability in localized areas, and result in a short-term loss of 49 AUMs, a long-term loss of 18 AUMs, and a permanent loss of 3 AUMs. O&M would result in minor impacts on livestock grazing. Decommissioning and reclamation would restore forage production on 170 acres.	Construction would disturb 544 acres, reducing forage availability in localized areas, and result in a short-term loss of 39 AUMs, a long-term loss of 15 AUMs, and a permanent loss of 3 AUMs. O&M would result in minor impacts on livestock grazing. Decommissioning and reclamation would restore forage production on 144 acres.

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Table 2.15-2. Summary Comparison of Resource Impacts by Inbound Haul Route.

Resource	Northern Inbound Haul Route	Southern Inbound Haul Route Option 1	Southern Inbound Haul Route Option 2
PHYSICAL			
Air Quality	Fugitive dust and tailpipe emissions would be generated from 39 acres of surface disturbance and travel on 96 miles of gravel road.	Fugitive dust and tailpipe emissions would be generated from 86 acres of surface disturbance and road construction with travel on 11 miles of gravel road.	Fugitive dust and tailpipe emissions would be generated from 90 acres of surface disturbance and road construction with travel on 13 miles of gravel road.
Geology	Potential impact associated with 39 acres of road reconstruction. Geologic hazard potential associated with approximately 0.4 acres of surface disturbance on slopes >20% and 1.4 acres of surface disturbance on slopes from 12 – 20%.	Potential impact associated with 86 acres of road reconstruction. Geologic hazard potential associated with approximately 14 acres of surface disturbance on slopes >20% and 18 acres of surface disturbance on slopes from 12 – 20%.	Potential impact associated with 90 acres of road reconstruction. Geologic hazard potential associated with approximately 15 acres of surface disturbance on slopes >20% and 16 acres of surface disturbance on slopes from 12 – 20%.
Soils	Construction would permanently disturb 27 acres of soil within areas rated as having medium or greater potential for water erosion and 27 acres within areas with moderate or greater wind erosion potential. Major, long-term, or permanent soil compaction would impact soils across 39 acres. Soils would have additional impacts from construction within recently burned areas over <1 acre. Operation and Maintenance (O&M) would have a negligible impact on soils.	Construction would disturb 86 acres of soil within areas rated as having medium or greater potential for water erosion and 7 acres within areas with moderate or greater wind erosion potential. Major, long-term, or permanent soil compaction would impact soils across 63 acres. Soils would have additional impacts from construction within recently burned areas across 80 acres. O&M would have a negligible impact on soils.	Construction would disturb 90 acres of soil within areas rated as having medium or greater potential for water erosion and 9 acres within areas with moderate or greater wind erosion potential. Major, long-term, or permanent soil compaction would impact soils across 67 acres. Soils would have additional impacts from construction within recently burned areas across 75 acres. O&M would have a negligible impact on soils.

Table 2.15-2. Summary Comparison of Resource Impacts by Inbound Haul Route (continued).

Resource	Northern Inbound Haul Route	Southern Inbound Haul Route Option 1	Southern Inbound Haul Route Option 2
Water Resources	Construction: Riparian habitat conservation areas (RHCAs) would have 2 acres of permanent disturbance. 4 existing stream crossings. Slopes >20%: 0.4 acres of permanent disturbance. Slopes 12-20%: 1.4 acres of permanent disturbance. Elk Mountain Fire: 0.2 acres of permanent surface disturbance. O&M: negligible impacts.	Construction: RHCAs would have 22 acres of permanent disturbance. 18 new or reconstructed stream crossings. Slopes >20%: 14.4 acres of permanent disturbance. Slopes 12-20%: 17.8 acres of permanent disturbance. Scott Creek Fire: 87 acres of permanent surface disturbance. O&M: 11 miles of roads and 18 stream crossings.	Construction: RHCAs would have 24 acres of permanent disturbance. 18 new or reconstructed stream crossings. Slopes >20%: 14.8 acres of permanent disturbance. Slopes 12-20%: 15.9 acres of permanent disturbance. Scott Creek Fire: 75 acres of permanent surface disturbance. O&M: 13 miles of roads and 18 stream crossings.
Noise	No noise impacts expected from haul-truck traffic. Wildlife noise impact likelihood increases with decreasing distance between wildlife and the roadway.	Same as the northern inbound haul route.	Same as the northern inbound haul route.

Table 2.15-2. Summary Comparison of Resource Impacts by Inbound Haul Route (continued).

Resource	Northern Inbound Haul Route	Southern Inbound Haul Route Option 1	Southern Inbound Haul Route Option 2
BIOLOGICAL			
Vegetation			
Upland Vegetation	Construction would permanently remove a total of 39 acres of vegetation, mostly Wyoming big sagebrush, agricultural, and annual vegetation. O&M activities would result in a minor short-term increase in dust deposition on vegetation adjacent to the 96-mile gravel portion of the road and greater risk of wildland fire starts.	Construction would remove a total of 86 acres of vegetation, mostly grassland-native perennial, low sagebrush, and black sagebrush. Approximately 63 acres would be permanently removed and 23 acres would be revegetated after construction, resulting in a change in vegetation composition. O&M activities would result in a minor short-term increase in dust deposition on vegetation adjacent to the 11-mile gravel road and greater risk of wildland fire starts.	Construction would remove a total of 90 acres of vegetation, mostly low sagebrush, grassland-native perennial, and black sagebrush. Approximately 67 acres would be permanently removed and 23 acres would be revegetated after construction, resulting in a change in vegetation composition. O&M activities would result in a minor short-term increase in dust deposition on vegetation adjacent to the 13-mile gravel road and greater risk of wildland fire starts.
Noxious Weeds and Invasive Plants	Approximately 39 acres of total surface disturbance would result in an increased potential for the establishment of noxious weeds and invasive plants. O&M activities, vehicle traffic, and surface disturbance along the 96-mile gravel portion of the road would indirectly increase potential for the establishment of noxious weeds and invasive plants.	Approximately 86 acres of total surface disturbance would result in an increased potential for the establishment of noxious weeds and invasive plants. O&M activities, vehicle traffic, and surface disturbance along the 11-mile gravel road would indirectly increase potential for the establishment of noxious weeds and invasive plants.	Approximately 90 acres of total surface disturbance would result in an increased potential for the establishment of noxious weeds and invasive plants. O&M activities, vehicle traffic, and surface disturbance along the 13-mile gravel road would indirectly increase potential for the establishment of noxious weeds and invasive plants.

Table 2.15-2. Summary Comparison of Resource Impacts by Inbound Haul Route (continued).

Resource	Northern Inbound Haul Route	Southern Inbound Haul Route Option 1	Southern Inbound Haul Route Option 2
Special Status Plants	Construction would permanently remove 24 acres of slickspot peppergrass potential habitat, 6 acres of Greeley's wavewing and Packard's cowpie buckwheat potential habitat, and 1 acre of Davis' peppergrass potential habitat. O&M activities would result in a minor short-term increase in dust deposition on special status plant (SSP) potential habitat adjacent to the 96-mile gravel portion of this road and greater risk of wildland fire starts.	Construction would permanently remove between 1 and 56 acres of potential habitat for 6 different SSPs, depending on the species. There would be no impacts on slickspot peppergrass or its habitat. O&M activities would result in a minor short-term increase in dust deposition on SSP potential habitat adjacent to the 11-mile gravel road and greater risk of wildland fire starts.	Construction would remove between 1 and 59 acres of potential habitat for 6 different SSPs, depending on the species. There would be no impacts on slickspot peppergrass or its habitat. O&M activities would result in a minor short-term increase in dust deposition on SSP occupied and potential habitat adjacent to the 13-mile gravel road and greater risk of wildland fire starts.
Fish and Wildlife			
Migratory Birds			
Raptors (including special status species)	Ferruginous hawks, prairie falcon, and Swainson's hawks are known to nest within 1.0 miles and could be impacted during road use and reconstruction. Avoidance of raptor habitat is not quantified because vegetation data was not available to evaluate it similarly to the southern inbound haul routes.	No raptor nests occur within 1.0 miles. Construction and use of the haul route would cause avoidance of up to 14,725 acres of raptor habitat and 135,440 acres of golden eagle habitat.	One golden eagle nest occurs within 1 mile. Construction and use of the haul route could result in nest abandonment or nest failure. Construction and use of the haul route would cause avoidance of up to 16,275 acres of raptor habitat and 138,310 acres of golden eagle habitat.
Passerines and Other Birds (including special status species)	26 acres of passerine habitat would be removed and up to 350 acres of habitat would be avoided.	85 acres of passerine habitat would be removed and up to 1,000 acres of habitat would be avoided.	89 acres of passerine habitat would be removed and up to 1,140 acres of habitat would be avoided.

Table 2.15-2. Summary Comparison of Resource Impacts by Inbound Haul Route (continued).

Resource	Northern Inbound Haul Route	Southern Inbound Haul Route Option 1	Southern Inbound Haul Route Option 2
Special Status Animals			
Greater sage-grouse	Habitat Removed: Key – 3 acres; R1 – 7 acres. Habitat Avoided: Key – 161,412 acres/R1 – 254,357 acres. Number of leks within 4-mile radius – 32 (12 overlap project area buffer). Use of the haul route could cause avoidance of otherwise suitable habitat during construction and decommissioning.	Habitat Removed: Key – 7 acres; R1 – 77 acres. Habitat Avoided: Key – 35,425 acres/R1 – 39,770 acres. Number of leks within 4-mile radius – 7 (all overlap project area buffer). Use of the haul route could cause avoidance of otherwise suitable habitat during construction and decommissioning. Use of the route by the general public would likely increase and would increase disturbance to grouse during O&M.	Habitat Removed: Key – 15 acres; R1 – 73 acres. Habitat Avoided: Key – 37,317 acres/R1 – 39,315 acres. Number of leks within 4-mile radius – 9 (8 overlap project area buffer). Use of the haul route could cause avoidance of otherwise suitable habitat during construction and decommissioning. Use of the route by the general public would likely increase and would increase disturbance to grouse during O&M.
Sharp-tailed Grouse	Two sharp-tailed grouse leks are within 4 miles of the haul route. Avoidance of sharp-tailed grouse habitat is not quantified because vegetation data was not available to evaluate it similarly to the southern inbound haul routes.	No leks are within 4 miles of the haul route. Avoidance of up to 1,362 acres of winter habitat would occur.	No leks are within 4 miles of the haul route. Avoidance of up to 1,366 acres of winter habitat would occur.
Bats	No breaks would be removed, no fatalities expected.	No breaks would be removed, no fatalities expected.	4 acres of breaks would be removed; fatalities could occur if roosting bats are present.

Table 2.15-2. Summary Comparison of Resource Impacts by Inbound Haul Route (continued).

Resource	Northern Inbound Haul Route	Southern Inbound Haul Route Option 1	Southern Inbound Haul Route Option 2
Small Mammals	0 acres of pygmy rabbit habitat, 18 acres of ground squirrel habitat, and 39 acres of Preble's shrew habitat would be removed. The Pahranagat Valley montane vole does not occur in Idaho and would therefore not be impacted.	1 acre of pygmy rabbit habitat, 86 acres of ground squirrel habitat, 22 acres of Pahranagat Valley montane vole habitat, and 86 acres of Preble's shrew habitat would be removed.	1 acre of pygmy rabbit habitat, 86 acres of ground squirrel habitat, 24 acres of Pahranagat Valley montane vole habitat, and 90 acres of Preble's shrew habitat would be removed.
Reptiles	18 acres of short-horned lizard habitat would be removed.	86 acres of short-horned lizard habitat would be removed.	90 acres of short-horned lizard habitat would be removed.
Amphibians	2 acres of special status amphibian habitat would be removed. 4 stream crossings along the existing route would require reconstruction. No new stream crossings. Impacts would be to Northern leopard frog habitat; Columbia spotted frogs do not occur along the northern inbound haul route and would not be impacted by its use.	22 acres of special status amphibian habitat would be removed. 18 new or reconstructed stream crossings. Impacts would be to Columbia spotted frog habitat; Northern leopard frogs are not expected this far south and would not be impacted by its use.	24 acres of special status amphibian habitat would be removed. 18 new or reconstructed stream crossings. Impacts would be to Columbia spotted frog habitat; Northern leopard frogs are not expected this far south and would not be impacted by its use.
Redband Trout	New road crossings of trout-bearing streams and tributaries: 0. New road miles in trout RHCAs: 0. Acres of disturbance in trout RHCAs: 2.5.	New road crossings of trout-bearing streams and tributaries: 9 (1/8). New road miles in trout RHCAs: 1.5. Acres of disturbance in trout RHCAs: 13.9.	New road crossings of trout-bearing streams and tributaries: 10 (1/9). New road miles in trout RHCAs: 1.8. Acres of disturbance in trout RHCAs: 16.5.
Big Game			
Mule Deer	144,125 acres of mule deer habitat would be avoided, of which 128,585 acres are winter habitat.	38,300 acres of mule deer habitat would be avoided, of which 11,320 acres are winter habitat.	40,450 acres of mule deer habitat would be avoided, of which 12,400 acres are winter habitat.
Elk	46,420 acres of elk habitat would be avoided.	33,750 acres of elk habitat would be avoided.	35,900 acres of elk habitat would be avoided.

Table 2.15-2. Summary Comparison of Resource Impacts by Inbound Haul Route (continued).

Resource	Northern Inbound Haul Route	Southern Inbound Haul Route Option 1	Southern Inbound Haul Route Option 2
American Pronghorn	86,460 acres of pronghorn habitat would be avoided, of which 84,120 acres is winter habitat.	33,610 acres of pronghorn habitat would be avoided, of which 11,585 acres is winter habitat.	35,745 acres of pronghorn habitat would be avoided, of which 13,110 acres is winter habitat.
SOCIAL AND ECONOMIC			
Historic and Cultural Resources	Low potential for direct impacts. About 39 acres of road reconstruction activities would occur, and would impact an estimated 5 archaeological sites.	High potential for direct impacts on several archaeological sites. High potential for indirect impacts associated with increased access. About 86 acres of road construction and reconstruction activities would impact at least 2 known archaeological sites and an estimated 10 sites would be impacted overall. This option would also have direct impacts on the historic Toana Wagon Road.	High potential for direct impacts on several archaeological sites. High potential for indirect impacts associated with increased access. About 90 acres of road construction and reconstruction activities would impact at least 1 known archaeological site and an estimated 10 sites would be impacted overall. This option would also have direct impacts on the historic Toana Wagon Road.
Tribal Treaty Rights and Interests	May result in direct and indirect impacts on sites and locations of interest to Native Americans.	Same as northern inbound haul route. Total impacts from use of this route are likely considerably greater than those for the northern inbound haul route.	Same as option 1.
Economic Conditions	Total Economic Output Impacts = \$3.3 million, Total Labor Income Impacts = \$1.7 million, Total Construction Employment = 97 full & part-time jobs.	Total Economic Output Impacts = \$1.7 million, Total Labor income Impacts = \$0.8 million, Total Construction Employment = 49 full & part-time jobs.	Same as option 1.

Table 2.15-2. Summary Comparison of Resource Impacts by Inbound Haul Route (continued).

Resource	Northern Inbound Haul Route	Southern Inbound Haul Route Option 1	Southern Inbound Haul Route Option 2
Visual Resources	Weak contrast in form, line, color, and texture resulting from construction and operation of the route. Minor temporary impacts on 39 acres of lands managed by Visual Resource Management (VRM) Class III objectives. Actions would be in conformance with VRM Class III Objectives.	Overall strong contrast anticipated due to construction and operation of the route. 19 acres of VRM Class II lands (Wells Field Office) would be affected. 23 acres of VRM Class III lands (Wells Field Office) would be affected.	Overall strong contrast anticipated due to construction and operation of the route. 14 acres of land managed as VRM Class II (Wells Field Office) would be affected. 53 acres of land managed as VRM Class III (Wells Field Office) would be affected.
Transportation and Access	Potential impacts on access and traffic would result from the construction and reconstruction of portions of the 119 miles of road with up to 15,130 truck trips for construction and decommissioning stages.	Potential impacts on access and traffic would result from the construction and reconstruction of 11 miles of road with up to 15,130 truck trips for construction and decommissioning stages.	Potential impacts on access and traffic would result from the construction and reconstruction of 13 miles of road with up to 15,130 truck trips for construction and decommissioning stages.
Public Health and Safety	Potential safety risks could result from use of this route and from construction and reconstruction of portions of the 119 miles of road.	Potential safety risks could result from use of this route and from construction and reconstruction of 11 miles of roads.	Potential safety risks could result from use of this route and from construction and reconstruction of 13 miles of roads.
Hazardous Materials and Petroleum Products	Impacts from accidental spills or illegal dumping associated with use of this route and construction or reconstruction of portions of the 119 miles of road.	Impacts from accidental spills or illegal dumping associated with use of this route and from construction and reconstruction of 11 miles of roads.	Impacts from accidental spills or illegal dumping associated with use of this route and from construction and reconstruction of 13 miles of roads.
Special Designations	No Impacts.	No Impacts.	No Impacts.
Lands with Wilderness Characteristics	No Impacts.	No Impacts.	No Impacts.

Table 2.15-2. Summary Comparison of Resource Impacts by Inbound Haul Route (continued).

Resource	Northern Inbound Haul Route	Southern Inbound Haul Route Option 1	Southern Inbound Haul Route Option 2
Fire and Fuels Management	This haul route is an existing roadway; 119 miles would still be available as potential fuel breaks. 39 acres would be permanently impacted and would not return to current or historic fire regime condition class.	Potential fuel breaks would be available during the project life along 11 miles of road. 63 acres would be permanently impacted and would not return to current or historic fire regime condition class.	Potential fuel breaks would be available during the project life along 13 miles of road. 67 acres would be permanently impacted and would not return to current or historic fire regime condition class.
LAND USE			
Recreation	No change in anticipated Natural Resource Recreation Setting.	Conversion of lands in the physical Recreation Setting Characteristic (RSC) from a combined middle country and front country setting (2,989 and 3,638 acres respectively) to a front country setting (6,627 acres) and the social RSC from a primitive setting to a middle country setting (6,627 acres).	Conversion of lands in the physical RSC from a combined middle country and front country setting (3,943 and 3,637 acres respectively) to a front country setting (7,580 acres) and lands in the social RSC from a primitive setting to a middle country setting 3,943 acres (7,580 acres).
Livestock Grazing	Construction would reduce forage availability across 39 acres and result in a permanent loss of 4 Animal Unit Months (AUMs). Use of this route during O&M would have a negligible impact on livestock grazing.	Construction would reduce forage availability across 86 acres and result in a short-term loss of 1-2 AUMs and a permanent loss of almost 4 AUMs. Use of this route during O&M would have a negligible impact on livestock grazing.	Construction would reduce forage availability across 90 acres and result in a short-term loss of 1-2 AUMs and a permanent loss of just over 4 AUMs. Use of this route during O&M would have a negligible impact on livestock grazing.

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CHAPTER 3 – AFFECTED ENVIRONMENT

Chapter 3

3.0 AFFECTED ENVIRONMENT

This chapter describes the existing or affected environment, including condition and trends of the human and natural environment that potentially could be affected by the alternatives described in Chapter 2. The Council of Environmental Quality regulations discuss "human environment" in 40 Code of Federal Regulations (CFR) 1508.14: the term broadly relates to biological, physical, social, and economic elements of the environment. The description of the affected environment is not meant to be a complete portrait of the project site, but is intended to portray the conditions and trends of most concern to the public and the Bureau of Land Management (BLM).

Within the description of resources, the terms project area and haul routes are used. The project area includes the right-of-way (ROW) preference area and a 250-foot buffer around all linear ROW grant areas outside of the ROW preference area (i.e., transmission interconnect lines and project roads) (Figure 2.3-1). The haul routes consist of the inbound and outbound routes that would be used to transport construction equipment and project infrastructure to and from the project area (Figure 2.4-1). Three inbound haul routes are being considered in this analysis (Section 2.4.2.4). Resource information is presented for areas where road construction or reconstruction is proposed on these routes.

The Council on Environmental Quality regulations require the BLM to obtain information when preparing National Environmental Policy Act (NEPA) documents if it is "relevant to reasonably foreseeable significant adverse impacts," if it is "essential to a reasoned choice among alternatives," and if "the overall cost of obtaining it is not exorbitant" (40 CFR 1502.22). The majority of the data that are used to characterize the affected environment were collected from the Jarbidge and Wells Field Offices of the BLM, United States (U.S.) Environmental Protection Agency (EPA), United States Fish and Wildlife Service (USFWS), United States Geologic Survey (USGS), National Resources Conservation Service, Idaho Department of Fish and Game (IDFG), Nevada Department of Wildlife (NDOW), Idaho Department of Environmental Quality (IDEQ), Nevada Department of Environmental Protection (NDEP), and other county and local agencies. The data include published and unpublished reports, maps, and data in digital format. In addition, field surveys for wildlife, visual, and cultural resources were conducted specifically for this project.

3.1 PHYSICAL RESOURCES

3.1.1 AIR QUALITY

The affected environment for air quality depends on emission source characteristics, pollutant types, emission rates, and meteorological and topographical conditions. Air quality in the project area vicinity is currently measured from data received by the closest monitoring stations, which are located in Twin Falls County, Idaho and Elko County, Nevada. The affected environment for air quality includes the project area and the inbound and outbound haul routes.

Air quality in a given location is described by the concentrations of various pollutants in the atmosphere, expressed in units of parts per million or micrograms per cubic meter ($\mu g/m^3$). Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and

topography of the air basin, and meteorological conditions related to the prevailing winds, which are normally to the southeast for the project area vicinity. The significance of a pollutant concentration is determined by comparison with Federal and/or state air quality standards. These standards represent the maximum allowable concentrations of various pollutants necessary to protect public health and welfare with a reasonable margin of safety.

The EPA sets national ambient air quality standards (NAAQS) for principal air pollutants, referred to as "criteria pollutants," to safeguard public health. The seven criteria pollutants are: ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter with an aerodynamic diameter equal to or less than 10 microns (PM_{10}, such as dust), particulate matter with an aerodynamic diameter equal to or less than 2.5 microns ($PM_{2.5}$, such as those found in smoke and haze), and lead (Environmental Protection Agency [EPA], 2009).

All areas throughout the U.S. are assigned to one of three different classes of air quality protection. These are called Prevention of Significant Deterioration Classes I, II, and III. Essentially, they help to insure that the air quality in clean air areas remains clean and does not deteriorate to the level of the NAAQS. The Jarbidge Wilderness Area in Nevada located 16 miles southwest of China Mountain is the closest Class I Area to the project. All land administered by the BLM in the project area vicinity has a Prevention of Significant Deterioration Class II status (Clean Air Act Amendments of 1977), for which moderate air quality deterioration associated with moderate, well-controlled industrial and population growth is allowed (EPA, 2009). Idaho air quality is under the jurisdiction of the EPA Region 10; Nevada air quality is under the jurisdiction of EPA Region 9. For air quality in the project area vicinity, the IDEQ and the NDEP have the primary responsibility to carry out the requirements of the Federal Clean Air Act as amended. The primary mechanism for implementation is known as the State Implementation Plan, which EPA requires each state to prepare for approval by EPA (EPA, 2009).

Monitoring and enforcement of air quality regulations are conducted by the IDEQ and the NDEP. The Idaho Administrative Procedures Act requires that all reasonable precautions be taken to prevent particulate matter from becoming airborne (Idaho Administrative Procedures Act 58.01.01.651). The authority for the Nevada Bureau of Air Pollution Control to implement air pollution control requirements has been established in the Nevada Revised Statutes 445B.100 through 445B.825, inclusive, and Nevada Revised Statutes 486A.010 through 486A.180, inclusive (Nevada Division of Environmental Protection [NDEP], 2009).

The EPA assigns classifications to geographic areas with respect to air quality conditions. When an area is considered for classification, there are three possible outcomes of the designation process for each of the criteria pollutants:

- **Attainment** – any area that meets the national primary or secondary ambient air quality standard for the pollutant.

- **Non-attainment** – any area that does not meet (or that contributes to ambient air quality in an area that does not meet) the national or secondary standard for the pollutant.

- **Unclassified** – any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant.

Many rural areas of Idaho and Nevada, including the project area, are designated unclassifiable and generally accepted by the EPA as being in attainment of the NAAQS. Criteria to determine the significance of air quality impacts are based on the above referenced standards and regulations. Impacts would be significant if project emissions (1) increase ambient pollutant concentrations from below to above any NAAQS, (2) contribute to an existing violation of any NAAQS, (3) impair visibility within federally mandated Prevention of Significant Deterioration Class I areas, or (4) result in non-conformance with the Clean Air Act or any State Implementation Plan. Under the Idaho State Implementation Plan, the IDEQ shall annually review the available ambient air quality data and when appropriate, redesignate areas as attainment, unclassifiable or non-attainment with the standards in 40 CFR Part 50 (Idaho Department of Environmental Quality [IDEQ], 2009). The Nevada portions of the project area are under the jurisdiction of NDEP Bureau of Air Pollution Control (Clark County, which houses Las Vegas; and Washoe County, which houses the Reno-Sparks metropolitan area, are under separate jurisdiction). The Nevada State Implementation Plan is also updated regularly with air quality data to help identify the potential need for redesignation of an area.

Though no locations in the project area vicinity are designated as Class I airsheds, air quality concerns and abatement measures are applicable to areas with special designations, such as Wilderness Study Areas and Areas of Critical Environmental Concern. The Salmon Falls Creek Wilderness Study Area managed by the Burley Field Office is approximately 3.3 miles northeast of the project area. The Playas and the Salmon Falls Creek Canyon Areas of Critical Environmental Concern are located 2 to 4 miles north and northeast of the northern project boundary.

The two main factors affecting air quality in the project area vicinity are particulate matter, such as dust and pollen (PM_{10}) and smoke ($PM_{2.5}$). These are a result of wind effects on open, exposed soils, gravel roads, and small disturbed areas, vehicle emissions, wildfires, and BLM fire management activities. Wildland fires are more contributing to degraded air quality than other sources in the area. These air quality impacts include not only immediate impacts from smoke, but also impacts from the movement of soil particles from high winds after the wildfire and fire stabilization and rehabilitation treatments (Bureau of Land Management [BLM], 2007).

Few outside influences on air resources exist in the project area except for adjacent private farming operations, which may contribute to a decline in air quality on a periodic basis as soils are tilled, plowed, and planted. The amount of particulate matter and smoke present depends on the time of year. Generally, the highest particulate levels occur during the summer and early fall, when soils are dry and wildfire activity is high. Other times of the year are typically wetter, helping to keep soils and

particulate matter in place with weather conditions less suitable for wildfire. Periodic air inversions make high levels of particulate pollutants worse, especially during the winter months (BLM, 2007).

Few, if any, other activities such as major industrial, mining, or commercial activities, occur in proximity to the project area that would degrade the air quality. The lack of developments and general remoteness of the project area makes it relatively free from other recognized or "critical" national ambient air quality pollutants such as carbon monoxide, lead, nitrogen dioxide, ozone, and sulfur oxides. None of these pollutants are known to occur in significant quantities or contribute to any air quality problems in the project area vicinity (carbon monoxide may exist in very high quantities in localized areas for a short duration during wildfire). According to IDEQ and NDEP, this region of the country is known to have relatively clean air.

Particulate matter is currently the most common criteria pollutant of concern in Idaho because particulate sources are widespread throughout the state. Monitoring data collected between 2001 and 2007 from the IDEQ Twin Falls monitoring station in Idaho (which monitors for $PM_{2.5}$ only) showed $PM_{2.5}$ to be well below the current national standard of 35 µg/m³, with a 3-year average ranging between 20 and 25 µg/m³ (IDEQ, 2007).

Particulate matter is also the most common criteria pollutant of concern in northern Nevada. Monitoring data collected between 1992 and 2003 from the NDEP Elko monitoring station in Nevada (which monitors for PM_{10} only) showed that PM_{10} concentrations were below the annual (50 µg/m³) and 24-hour (150 µg/m³) standards for the purpose of regulatory determinations. The annual standard mean for PM_{10} ranged between 20 and 40 µg/m³. The highest 24-hour concentrations of PM_{10} are often the result of high winds and dry desert terrain (NDEP, 2003).

3.1.2 GEOLOGY

The analysis area for geology includes the project area and the areas where disturbance/construction is proposed along the northern inbound haul route and both options of the southern inbound haul route.

3.1.2.1 Geologic Setting

The project area is situated on the margin of the Basin and Range and Snake River Plain physiographic regions, and the landscape and underlying geology exhibit features of both within a range of elevation of 5,200 feet to 7,740 feet. The occurrence of various rock types is the product of voluminous Miocene-age volcanic activity of the Snake River Plain related to the Yellowstone Hotspot (Bonnichsen, Leeman, Honjo, McIntosh, & Godchaux, 2008). However, the Browns Bench landform is more representative of the Basin and Range region, where extension (pulling apart) of the earth's crust causes normal faults that result in an alternating pattern of uplifted mountain ranges and down-dropped basins.

The prominent Browns Bench escarpment comprises the western margin of a basin, locally known as the O'Neil Basin, which is bounded on the east by the Shoshone Hills. Browns Bench has been

uplifted relative to the east-adjacent O'Neil Basin along the north-northeast striking, east dipping Browns Bench Fault, resulting in a structural basin described in the geologic literature as the Rogerson Graben (Andrews, Branney, Bonnichsen, & McCurry, 2007).

Browns Bench is composed of silicic volcanic rocks and pyroclastic deposits of the Rogerson Formation (Andrews et al., 2007). The rock types that underlie the project area include rhyolite, quartz latite, and latite ignimbrites (welded pyroclastic flow deposits). The Rogerson Formation is chiefly composed of rhyolitic ignimbrites likely related to large explosive eruptions at the Jarbidge-Bruneau and Twin Falls eruptive centers (Pierce & Morgan, 1992).

Mineral Resources

Within the project area, there are no known oil and gas discoveries, no active coal leases, no coal bed methane producing resources, and no locatable minerals that are known to exist in sufficient quantities for economic recovery (United States Geologic Survey [USGS], 2008). There are no known mining claims or abandoned mine lands within the project area. The nearest abandoned mine on public land is located approximately 8 miles south of the project area. Sand and gravel are available at the Cedar Creek Reservoir Free Use Permit Pit, located to the south of Cedar Creek Reservoir, 4.4 miles north of the project area (Hughes, 2009). An active stone quarry is located 5.6 miles east of the project area and produces crushed or broken stone (USGS, 2008).

Geologic Hazards

There is moderate potential for seismic activity according to the Uniform Building Code Seismic Code Map (Idaho Geologic Survey, 2003). A map of Tertiary-age or younger faults in Idaho shows that the Browns Bench Fault was active in the last 16 million years (Breckenridge, Lewis, Adema, & Weisz, 2003a). No faults are mapped in the Nevada portion of the project area (Coats, 1987). No earthquakes have occurred in the project area according to the 1871 to 2000 map of earthquake activity in Idaho (Breckenridge et al., 2003b).

Although there is no site-specific data for the project area, landslides and other forms of mass wasting may occur in areas of steep terrain, generally defined as slopes greater than 20 percent. There are 7,480 acres of slopes greater than 20 percent within the project area. Unstable slopes can occur on hillsides or cliffs, or in areas that are susceptible to landslides, mudflows, rock falls or accelerated creep of slope-forming materials. Unstable slopes could occur naturally in the project area. Most unstable slopes in this area consist of weathered rhyolitic rocks and/or recent colluvium deposits that could move downhill due to gravity. Unstable slopes can be active or inactive. Slope failure can be initiated by a change of conditions, either natural or man-induced. Natural factors contributing to slope instability include weathering and erosion, changes in the hydrologic characteristics of the hillside, loss of vegetation cover, earthquakes, and the slow natural deterioration of slope strength. Artificial factors that can undermine slope strength are cut and fill operations, alteration of surface drainages, excessive irrigation, the removal of vegetation cover, blasting, and vehicular traffic.

3.1.3 SOILS

Existing conditions for soils within the project area, within a 250-foot buffer of the southern inbound haul route options, and within a 250-foot buffer of the northern inbound haul route were evaluated based on soil data derived from the National Resources Conservation Service soil survey geographic database for Idaho (Natural Resources Conservation Service [NRCS], 2008) and Nevada (NRCS, 2007). Soils were mapped at different times and different scales for the Nevada and Idaho portions resulting in slight variations in the mapping units and attributes of the data.

The soils of the project area are somewhat diverse. Their makeup and composition are dependent on parent material, location, topography, aspect, elevation, and time and age in place. Twenty-seven associations, complexes, and consociations occur within the project area. The soils have the following general characteristics:

- they have a gravelly or cobbly loam surface texture with clay loam or gravelly clay loam at depth;
- they occur at elevations ranging from 5,200 feet to 7,740 feet;
- they are derived from volcanic rocks, volcanic ash, and welded tuff;
- they are well drained;
- they have low-to-moderate water carrying capacity;
- they have low-to-moderate potential for frost action;
- they have medium-to-high potential for surface water runoff;
- they have medium-to-high potential for erosion by water;
- they have slight-to-moderate potential for erosion by wind; and
- they have minimal-to-moderate productive capabilities as rangeland.

Several factors influence soils and contribute to accelerated soil degradation. Soil degradation occurs through soil erosion by water and wind, soil compaction, and loss of soil structure through undesirable mixing of soil horizons. Soil erosion is influenced by the amount and type of living or dead vegetation cover, biological soil crusts, and rock (Belnap, 2003; Pierson, Bates, Svejcar, & Hardegree, 2007). In general, as cover increases, soil erosion potential decreases.

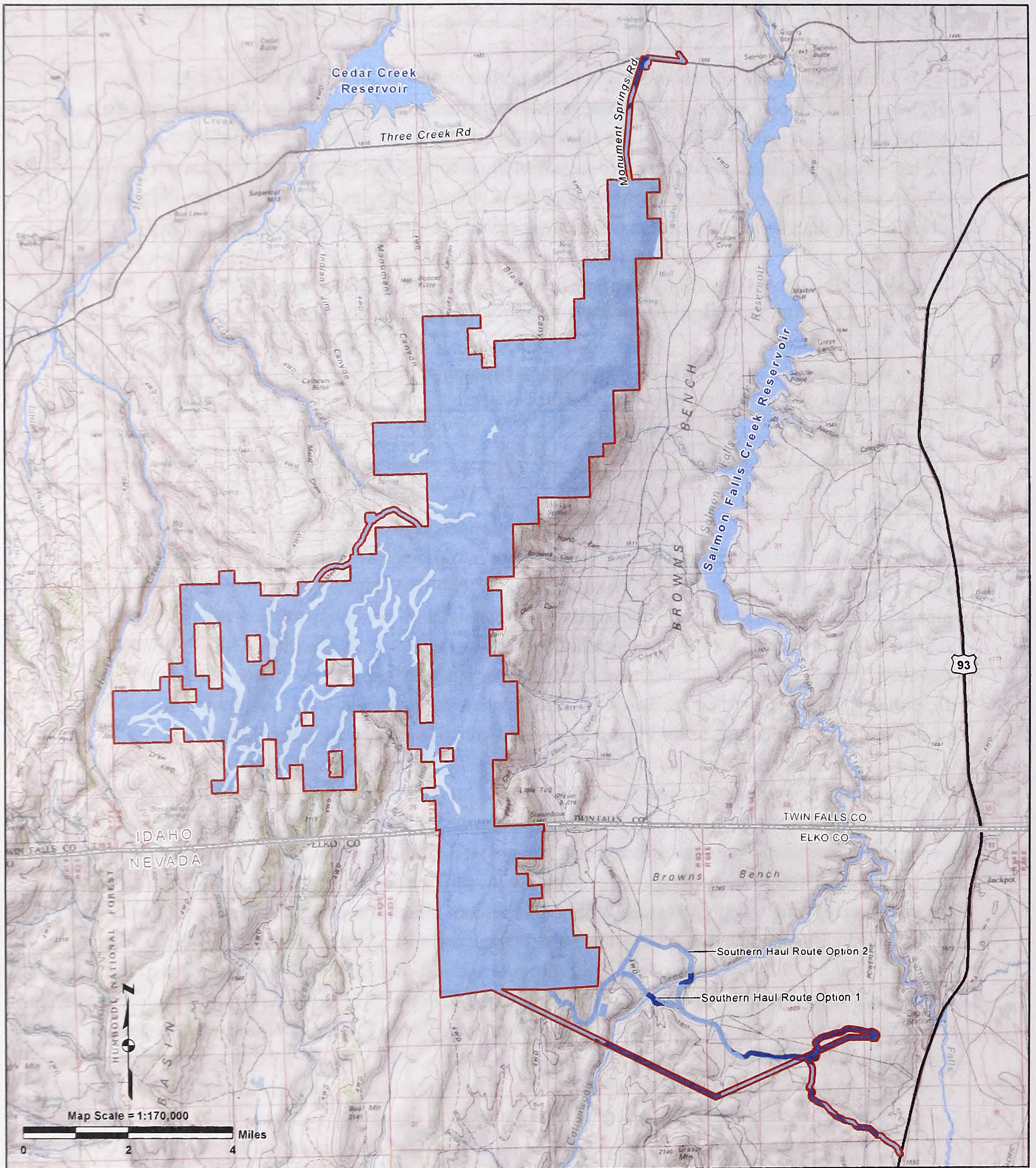
The potential for water erosion exists when disturbed or unprotected soil is exposed to rainfall. There are two general types of erosion caused by water: sheet erosion and rill or gully erosion. Sheet erosion is the uniform detachment and removal of surface soil due to the direct impact of intense rainfall and occurs where the soil is exposed. Rill and gully erosion result from the channeling of concentrated runoff water. Soil erosion caused by water is closely linked to water quality and many of the same activities that increase soil erosion potential could also impact water resources. To assess water erosion potential for soils within the project area, a soil erodibility factor was used to determine and classify the susceptibility of soil particles to detachment and movement by water. Classes of water erosion potential are low, medium, or high. Over 90 percent of the soils within the project area have medium potential for water erosion, less than 2 percent have high potential for water erosion, and about 6 percent have low potential for water erosion (Table 3.1.3-1; Figure 3.1.3-1). Over 60 percent

of soils within the affected environment area of the northern inbound haul route have medium water erosion potential, 25 percent have high water erosion potential, and 7 percent have low water erosion potential. Soils in almost 40 percent of the affected environment area of the northern inbound haul route have high water erosion potential and just over 60 percent of the soils have medium water erosion potential. Soils within the affected environment area for both options of the southern inbound haul route are within areas with medium or greater potential for water erosion (Figure 3.1.3-1).

Table 3.1.3-1. Water Erosion Potential (in acres) within the Project Area, Northern Inbound Haul Route, and both Southern Inbound Haul Route Options.

Water Erosion Class	Project Area	Northern Inbound Haul Route	Southern Inbound Haul Route	
			Option 1	Option 2
Low	1,939	399	0	0
Medium	29,566	3,879	560	662
High	491	1,469	194	192
No Data	10	88	0	0

Wind erosion removes and redistributes soil when there is sufficient windspeed at the soil surface level to lift and transport soil particles. Wind erosion is a problem primarily in dry regions where high winds occur frequently and soils are disturbed or unprotected. Soil erosion caused by wind is closely linked to air quality and many of the same activities that increase erosion potential could also impact air quality. To assess the potential of erosion caused by wind, wind erodibility groups were used to differentiate soils based on their resistance to wind erosion. Categories of wind erosion potential are non-erosive, slight, moderate, severe, and very severe. About 25 percent of the project area is considered to be in the non-erosive category for wind erosion (Table 3.1.3-2; Figure 3.1.3-2). Forty-two percent of soils within the project area have a slight potential for wind erosion, 28 percent have a moderate potential for wind erosion, and 5 percent have a severe potential for wind erosion. Sixty-four percent of the soils within the affected environment area of the northern inbound haul route have a moderate potential for wind erosion, 24 percent have severe wind erosion potential, and 1 percent have very severe wind erosion potential. Within the northern inbound haul route, 8 percent of the soils have a slight potential for wind erosion and 3 percent are non-erosive. Almost 90 percent of the soils within option 1 of the southern inbound haul route and just over 90 percent of option 2 are rated as having either non-erosive or slight wind erosion potential (Figure 3.1.3-2). Nearly 9 percent of the soils within option 1 of the southern inbound haul route and 12 percent within option 2 are rated as having moderate wind erosion potential.



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Project Area Boundary

Water Erosion Potential Class

Low

High

Medium

No Data

Figure 3.1.3-1. Water Erosion Potential within the Project Area and Southern Inbound Haul Routes

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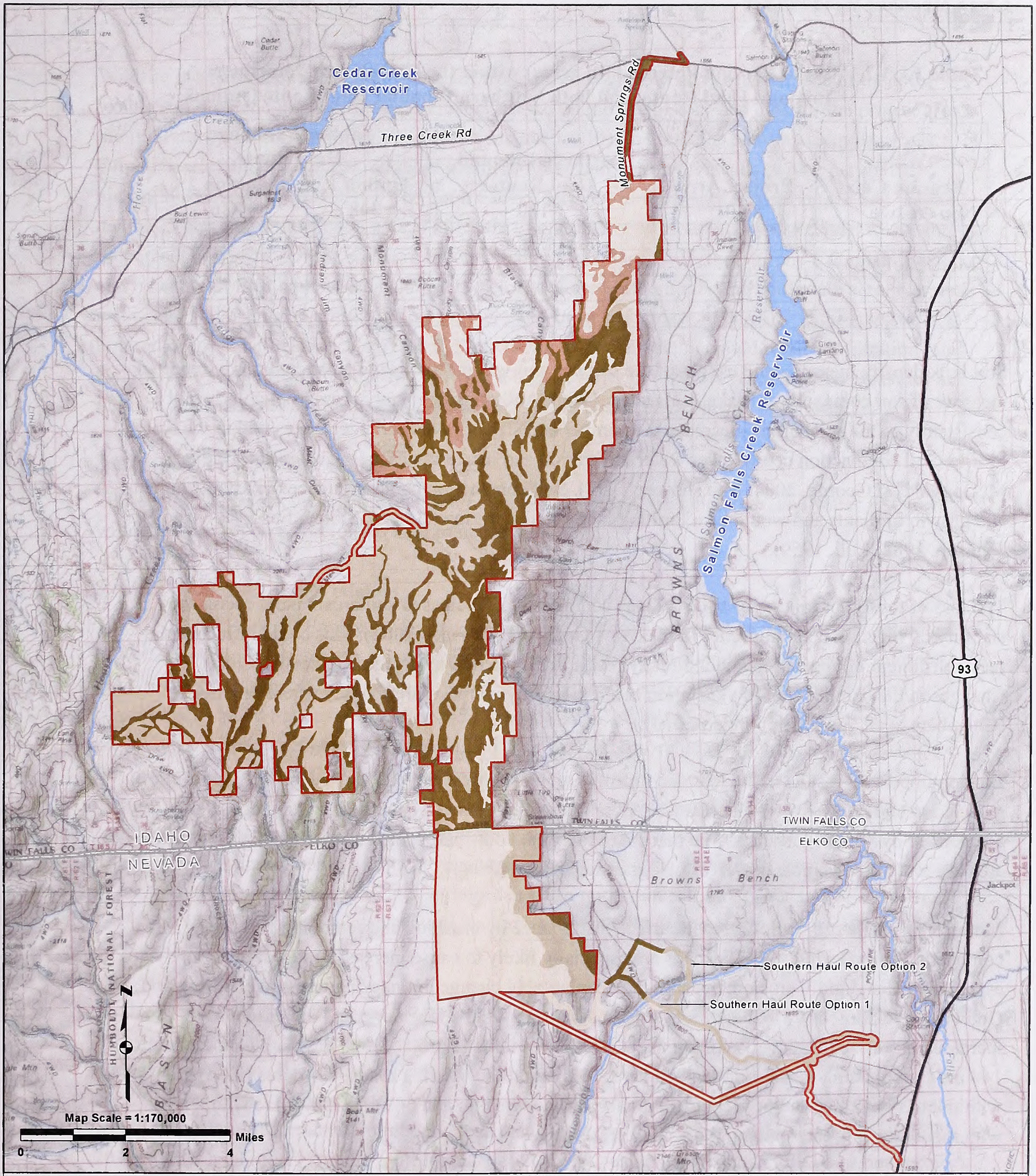

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Project Area Boundary

Wind Erosion Potential Class

- Non-Erosive
- Slight
- Moderate
- Severe

Figure 3.1.3-2. Wind Erosion Potential within the Project Area and Southern Inbound Haul Routes

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Table 3.1.3-2. Wind Erosion Potential (in acres) within the Project Area, Northern Inbound Haul Route, and both Southern Inbound Haul Route Options.

Wind Erosion Class	Project Area	Northern Inbound Haul Route	Southern Inbound Haul Route	
			Option 1	Option 2
Non-erosive	8,101	180	348	336
Slight	13,348	459	340	414
Moderate	8,901	3,739	65	104
Severe	1,657	1,413	0	0
Very Severe	0	31	0	0

Soil bulk density measures the weight of the soil per unit volume and is the most commonly reported measure of soil compaction (Blake & Hartage, 1986). Activities that apply pressure regularly and consistently to the soil surface decrease the number and size of pores and interspaces within the soil profile. Soil compaction could lower water infiltration and increase surface runoff (Tate, Dudley, McDougald, & George, 2004; Munshower, 1994). Soil compaction could influence the establishment and growth of plants and would be a limiting factor in restoration (Adams, Stolzy, Enso, Rowlands, & Johnson, 1982; Lull, 1959).

The loss of topsoil or mixing of soil horizons could result in increased soil erosion and decreased stability of vegetation communities (Brockway, Gatewood, & Paris, 2002). This could influence the reestablishment of vegetation and indirectly result in the alteration of vegetation composition. Changes in the composition of vegetation could indirectly increase fire frequency and severity (Chambers et al., 2005; Ripplinger, 2010).

Erosion in general results in the loss and redistribution of topsoil and changes the capacity of the soil to function and recover after disturbance. Although soil erosion is a natural process, it could be accelerated by human activities. The main activities that contribute to soil erosion within the project area are motorized vehicle use, livestock grazing, and wildfire.

Motorized vehicle use could increase surface disturbance by crushing and removing vegetation and compacting soils (Liddle, 1997). Roads are especially likely to cause increased rates of erosion, especially rill and gully erosion, because they can notably change drainage patterns (Webb, Ragland, Godwin, & Jenkins, 1978). In addition, soil erosion from wind and water could increase with increased motorized vehicle use (Ouren et al., 2007). Within the project area, there are approximately 144 miles of existing roads equaling 205 acres in area. Of the existing roads, 190 acres (93%) are within areas with medium or greater potential for water erosion and 66 acres (32%) are within areas with moderate or greater potential for wind erosion.

Livestock grazing occurs throughout the project area where vegetation and topography allow. Blackburn (1984) summarized the concerns that grazing could lead to localized soil compaction which could reduce infiltration capacity causing increased surface runoff and excessive soil erosion. In addition, overgrazing could reduce vegetation enough to increase soil erosion in localized areas (Dormaar & Williams, 1990).

Wildfire is a natural phenomenon, and apart from the consumption of vegetation, one of the most visible and dramatic impacts of fire is erosion. Based on the fire history and data for the project area, the fire return interval is relatively frequent (Section 3.3.10). In 2007, the Murphy Complex Fires burned nearly 600,000 acres throughout southern Idaho and northern Nevada, with a perimeter of almost 300 miles (Figure 3.3.10). The Scott Creek Fire, part of the complex, overlapped and burned nearly 25 percent of the project area, 71 percent of option 1 of the southern inbound haul route, and 64 percent of option 2 of the southern inbound haul route. Since 2007, the Murphy Complex Fires and other small fires have burned almost 19 percent of the northern inbound haul route area. Fire and associated soil heating can destroy soil structure and cause a decrease in porosity within the surface horizon of the soil (DeBano, Neary, & Folliot, 1998). This compaction could reduce infiltration rates and increase surface runoff. Shortly following a high severity fire, before rehabilitation measures are in place and soils are stabilized, erosion potential would increase (Debano et al., 1998).

3.1.4 WATER RESOURCES

This section discusses the existing conditions for riparian areas, wetland areas, and water resources within the project area and for the haul route options.

3.1.4.1 Riparian and Wetlands

The U.S. Army Corp of Engineers defines wetlands as: "Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (United States Army Corps of Engineers, 1987). Wetlands within the project area probably all function differently, depending on their hydrogeomorphic position within the landscape. For example, riparian wetlands provide: flood attenuation and energy dissipation; production of organic material; habitat for macroinvertebrates and songbirds; stream thermoregulation; and cover and forage for mammals. Headwater seep wetlands provide base flow support for downstream waters. They may also support unique wetland vegetation communities that make up a very small percentage of land. Wetlands surrounding natural springs can be an important summer water source for both cattle and wildlife. They may also provide a source of regionally scarce nutritious, green vegetation during the dry season.

Wetlands within the project boundary and along the haul routes are under jurisdiction of the U.S. Army Corp of Engineers because their associated streams are hydrologically-connected through the Snake and Columbia Rivers to the Pacific Ocean (Section 404 of the Clean Water Act, 40 CFR 232.2(r)). A wetland delineation study was performed for the Cottonwood Creek crossings associated with both options of the southern inbound haul route (Western Ecosytems Technology Inc. [WEST], 2010). Other haul routes and the project area would be delineated for wetlands following final project design.

A desktop study estimated the areas of potential wetlands adjacent to waterways within the project area (URS Corporation [URS], 2010a). Small wetland areas are dispersed throughout the project area and along the haul routes (Figure 3.1.4-1). The project area contains 16 acres of potential wetlands.

Option 1 of the southern inbound haul route contains 2 acres of potential wetlands, and option 2 of the southern inbound haul route contains 1.6 acres of potential wetlands.

The Natural Resources Conservation Service (NRCS, 2007) defines riparian areas as vegetation communities dependent upon the presence of free or unbound water in the soil and occurring along watercourses (e.g., rivers and streams) or water bodies (e.g., lakes and reservoirs). These communities provide a link between aquatic and upland habitats. Riparian areas serve as effective sediment traps and reduce the amount of sediment that might otherwise get to a stream or a downstream water body. Riparian areas may also intercept nutrients, (e.g., nitrogen and phosphorus) moving in ground water or surface runoff before reaching a stream. Riparian areas can help to thermoregulate stream temperatures by providing a vegetation canopy along a streambank (NRCS, 2010). Riparian vegetation also helps to decrease the rate of bank erosion, which reduces sediment input into water bodies. This is especially true of deep-rooted woody vegetation. Vegetation protects streambanks from erosion by reducing the tractive force of water, by protecting the bank from direct impacts, and by inducing deposition (Parsons, 1963). Trees, shrubs, and herbaceous species associated with riparian systems within or near the project area generally fit into one of three classes: herbaceous, shrubland, or woodland vegetation. Typical of the herbaceous riparian class are species like rushes and sedges. Willows, Wood's rose, chokecherry, serviceberry, and red osier dogwood exemplify the riparian shrubland class. Species such as aspen are commonly associated with riparian woodlands (BLM, 2010, p. 3-18).

For the project area, the location and size of riparian areas were estimated by assigning buffers around riparian habitat conservation areas (RHCAs), as defined in the Inland Native Fish Strategy (United States Forest Service [USFS], 1995). These RHCAs include riparian corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems. RHCAs were used in lieu of physically mapping riparian or wetland areas in the field. All buffer areas are assumed to contain riparian or wetland vegetation. The RHCA buffers are: 300 feet from fish-bearing streams; 150 feet from perennial, non fish-bearing streams, ponds, lakes, reservoirs, and wetlands greater than 1 acre; and 100 feet from seasonally flowing or intermittent streams and wetlands less than 1 acre (USFS, 1995). Based on these buffers, there are 2,160 acres of RHCAs within the project area and haul routes (Table 3.1.4-1; Figure 3.1.4-2 and Figure 3.1.4-3). Streams associated with the project area and haul routes are displayed in Figures 3.1.4-4 and 3.1.4-5.

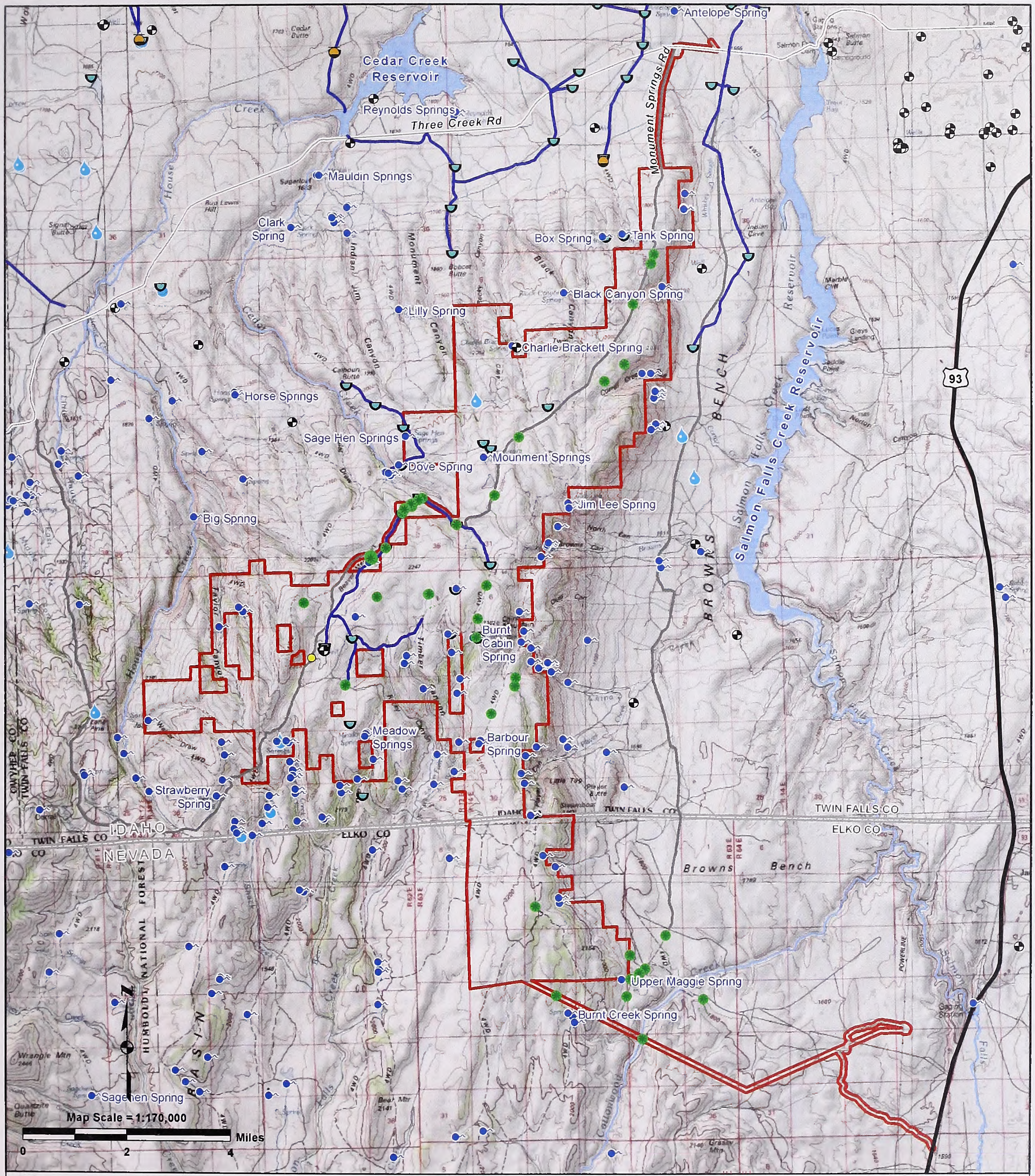

Figure 3.1.4-1. Water Resources

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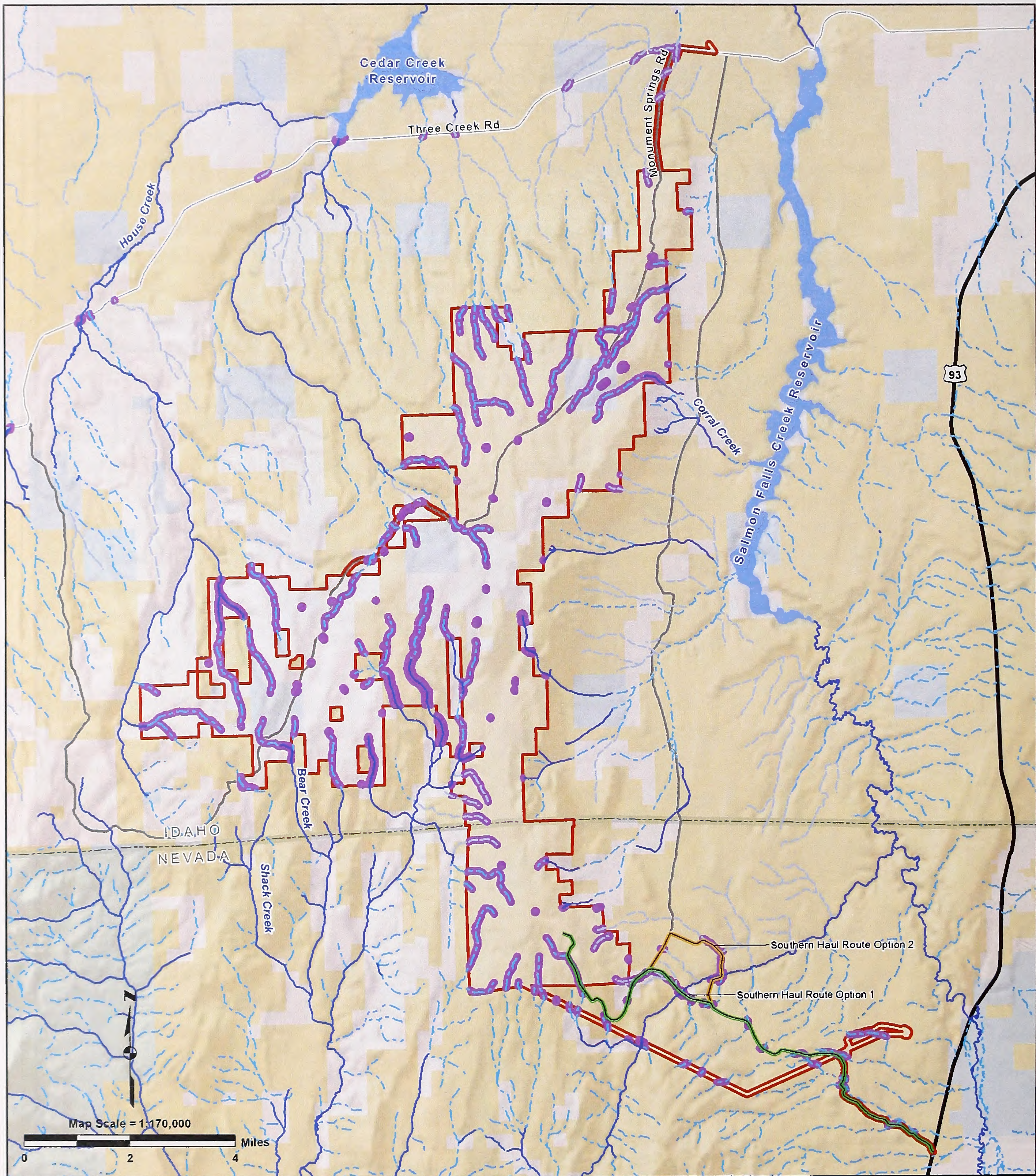

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Project Area Boundary

Riparian Habitat Conservation Areas

Stream Type

Ephemeral — Intermittent — Perennial

Figure 3.1.4-2. Riparian Habitat Conservation Areas within the Project Area and Southern Inbound Haul Routes

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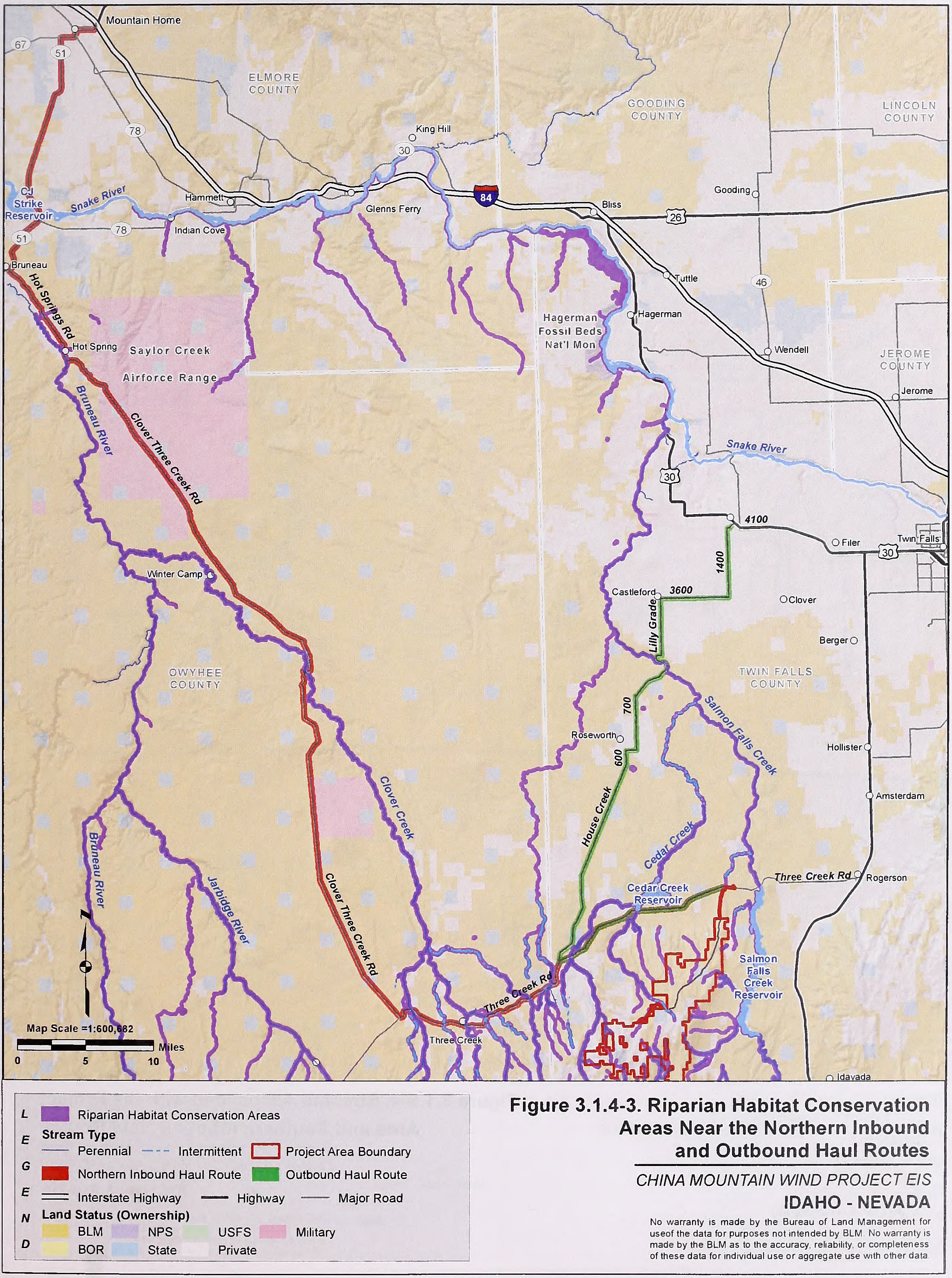

Figure 3.1.4-3. Riparian Habitat Conservation Areas Near the Northern Inbound and Outbound Haul Routes

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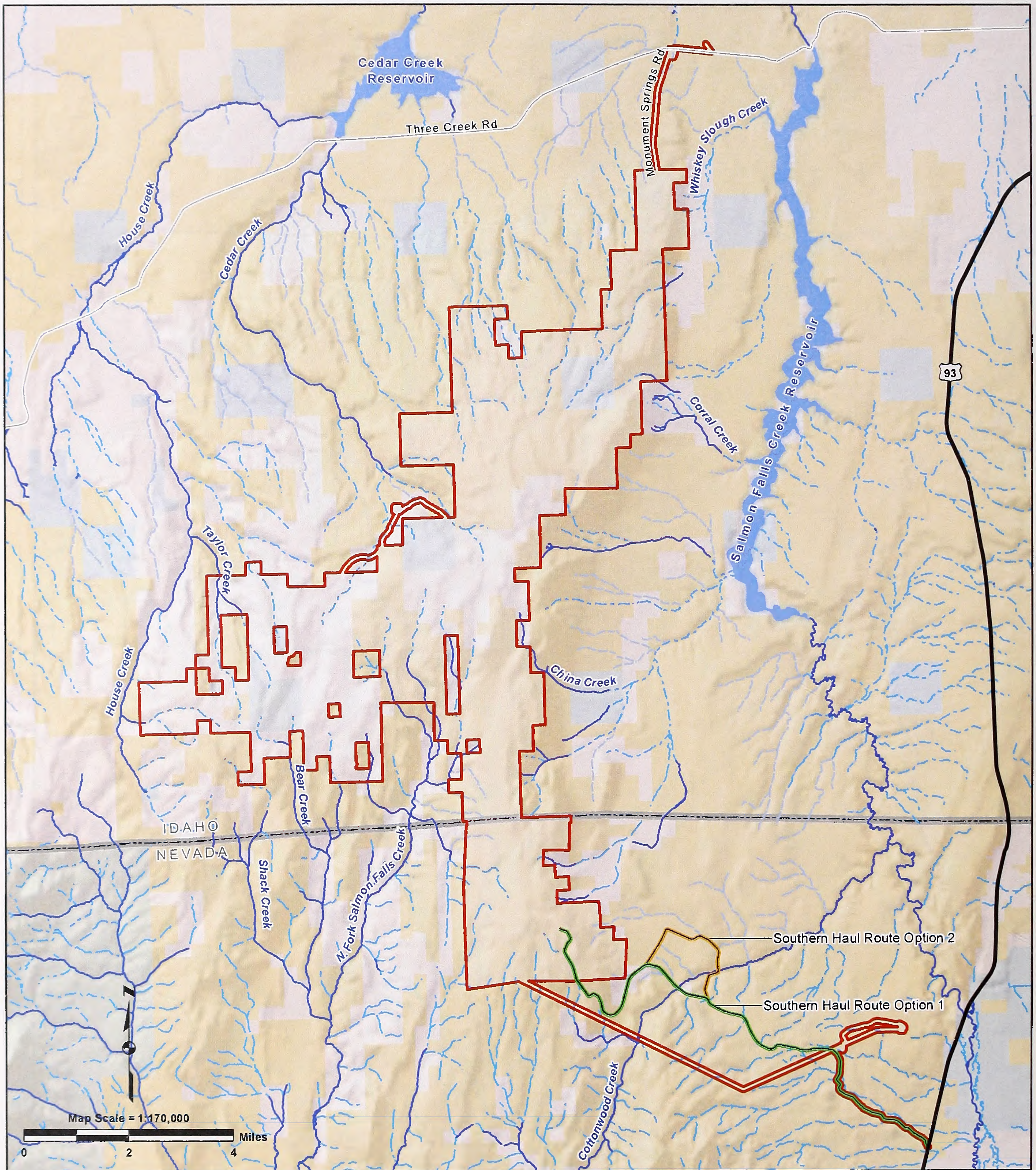

LEGEND

Project Area Boundary

Stream Type
Ephemeral
Intermittent
Perennial

Land Status (Ownership)
BLM
USFS
Private
State

Figure 3.1.4-4. Streams Associated with the Project Area and Southern Inbound Haul Routes

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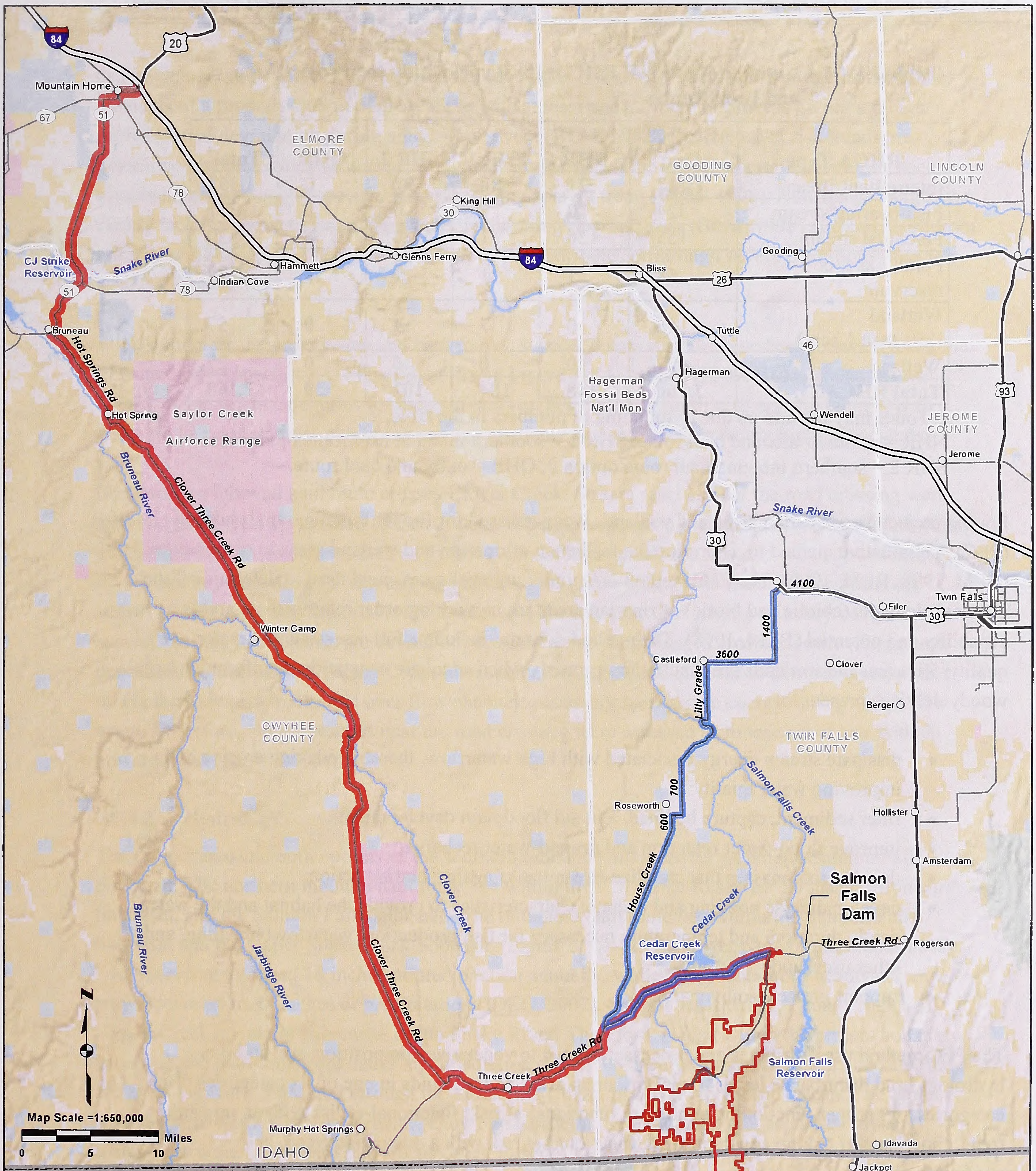

LEGEND

Project Area Boundary

Proposed Northern Inbound Haul Route

Proposed Outbound Haul Route

Interstate Highway — Highway — Major Road

Land Status (Ownership)

BLM NPS USFS State

Military Private BOR

3.1.4-5. Streams Associated with the Northern Inbound and Outbound Haul Routes

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Table 3.1.4-1. Number of acres of RHCAs, by Type, within the Project Area and Haul Routes.

RHCA Type	Project Area	NHR	SHR 1	SHR 2	OHR	Total[1]
Intermittent stream	1,147	21	88	97	0	1,353
Fish-bearing stream	324	0	7	0	0	331
Perennial stream	155	126	1	0	38	320
Pond, Lake, or reservoir	68	1	1	1	1	72
Wetland (less than 1 acre)	46	0	7	4	0	57
Wetland	27	0	0	0	0	27
Total RHCA[1]	**1,766**	**148**	**104**	**102**	**39**	**2,160**

1 Totals may not add up due to rounding of numbers in the table.
NHR = northern inbound haul route, SHR 1 = southern inbound haul route option 1, SHR 2 = southern inbound haul route option 2, OHR = outbound haul route.

For the project area, riparian areas and wetlands were assessed for Proper Functioning Condition (PFC), a qualitative method to determine the resilience of riparian and wetland areas to disturbance (BLM, 1998; BLM, 1999). The PFC method is a minimum level assessment used to determine if the physical elements (abiotic and biotic) of riparian areas are in working order relative to an area's capability and potential (BLM, 1998). The method does not include a full assessment of water quality. Riparian and wetlands are functioning properly when adequate vegetation, landform, or large woody debris is present to:

- dissipate stream energy associated with high waterflow, thereby reducing erosion and improving water quality;
- filter sediment, capture bedload, and aid floodplain development;
- improve flood-water retention and ground-water recharge;
- develop root masses that stabilize streambanks against cutting action;
- develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and
- support greater biodiversity.

The PFC method uses attributes and processes related to vegetative composition, soil stability, hydrology, and disturbance levels to place riparian areas and wetlands in one of six categories. The categories are: proper functioning condition, functional-at risk, functional-at risk with an upward trend, functional-at risk no apparent trend, functional-at risk with a downward trend, and nonfunctional.

Riparian areas are considered to be properly functioning when they are in a state of resiliency and would hold together during high-flow events with a high degree of reliability (BLM, 1998). This resiliency allows an area to then produce desired values, such as fish habitat, neotropical bird habitat,

or forage, over time (BLM, 1998). Areas functioning at risk may possess some or even most of the elements of a properly functioning area, but with at least one attribute or process giving it a high probability of degradation during a high-flow event (BLM, 1998). Functional-at risk trends are determined by previous inventories; or in the absence of such information certain indicators, such as establishment of wetland species, can provide an apparent trend (BLM, 1998). Non-functioning areas clearly lack the characteristics of properly functioning riparian areas (BLM, 1998) and can result from not achieving acceptable levels in a number of PFC attributes or through severe conditions in as few as one attribute.

Within and near the project area and haul routes, several stream reaches have been assessed using the PFC method (Appendix 3A; Figure 3.1.4-6 and Figure 3.1.4-7; BLM, 2009; BLM, 2006a; BLM, 2006b). Assessment categories for these stream reaches ranged from PFC to non-functional, with many of the riparian areas exhibiting enough resilience to hold together during high-flow events.

The northern inbound haul route crosses Clover Creek. Stream reaches near the road crossing were assessed using the PFC method (BLM, 2006a). Riparian vegetation includes a diversity of both young and mature vigorous willows, such as Pacific willow (*Salix lucida* spp. *lasiandra*), yellow willow (*S. lutea*), and coyote willow (*S. exigua*). In addition, rose (*Rosa* sp.), Baltic rush (*Juncus balticus*), sedges (*Carex spp*), and spikerush (*Eleocharis* sp.) are common. Despite the diversity of riparian species present, many banks are devoid of vegetation, exposing them to erosion, down cutting, and deposition. Some areas of Clover Creek have many rocks, boulders present to dissipate energy, and others lack adequate rocks and over flow channels necessary to dissipate energy during a high flow event. Therefore, stream reaches near the road crossing were assessed as functional-at risk with an upward trend (BLM, 2006a).

3.1.4.2 Hydrology

The project area and both options of the southern inbound haul route lie within the Salmon Falls Subbasin. The northern inbound haul route lies within the C.J. Strike Reservoir Subbasin, Bruneau Subbasin, and the Salmon Falls Subbasin. The outbound haul route lies within the Salmon Falls Subbasin and the Upper Snake-Rock Subbasin (Figure 3.1.4-8). The lower parts of the subbasins are arid, receiving less than 10 inches of precipitation annually, while the mountainous headwater areas may receive up to 38 inches of precipitation (IDEQ, 2007). Salmon Falls Creek, Cedar Creek, and Clover Creek are major tributaries of the Snake River. Therefore, waters within the project boundary and along the haul routes are under the jurisdiction of the U.S. Army Corp of Engineers because they are hydrologically connected through the Snake and Columbia Rivers to Pacific Ocean. The project area encompasses a northeast-oriented chevron-shaped topographic ridge that separates streams which flow either northward into Cedar Creek Reservoir (constructed in 1910), or southward and eastward into Salmon Falls Creek Reservoir (constructed in 1906).

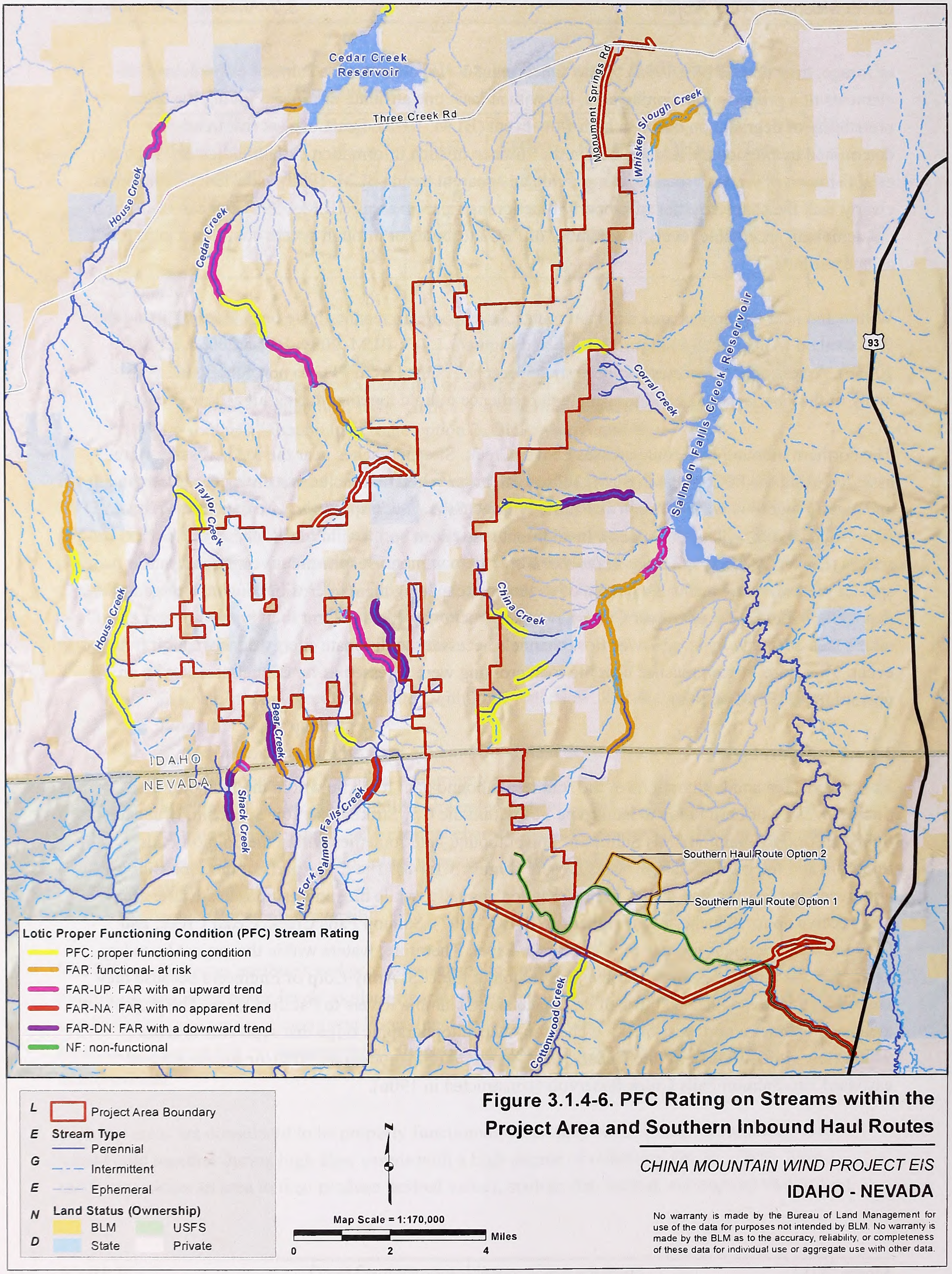

Figure 3.1.4-6. PFC Rating on Streams within the Project Area and Southern Inbound Haul Routes

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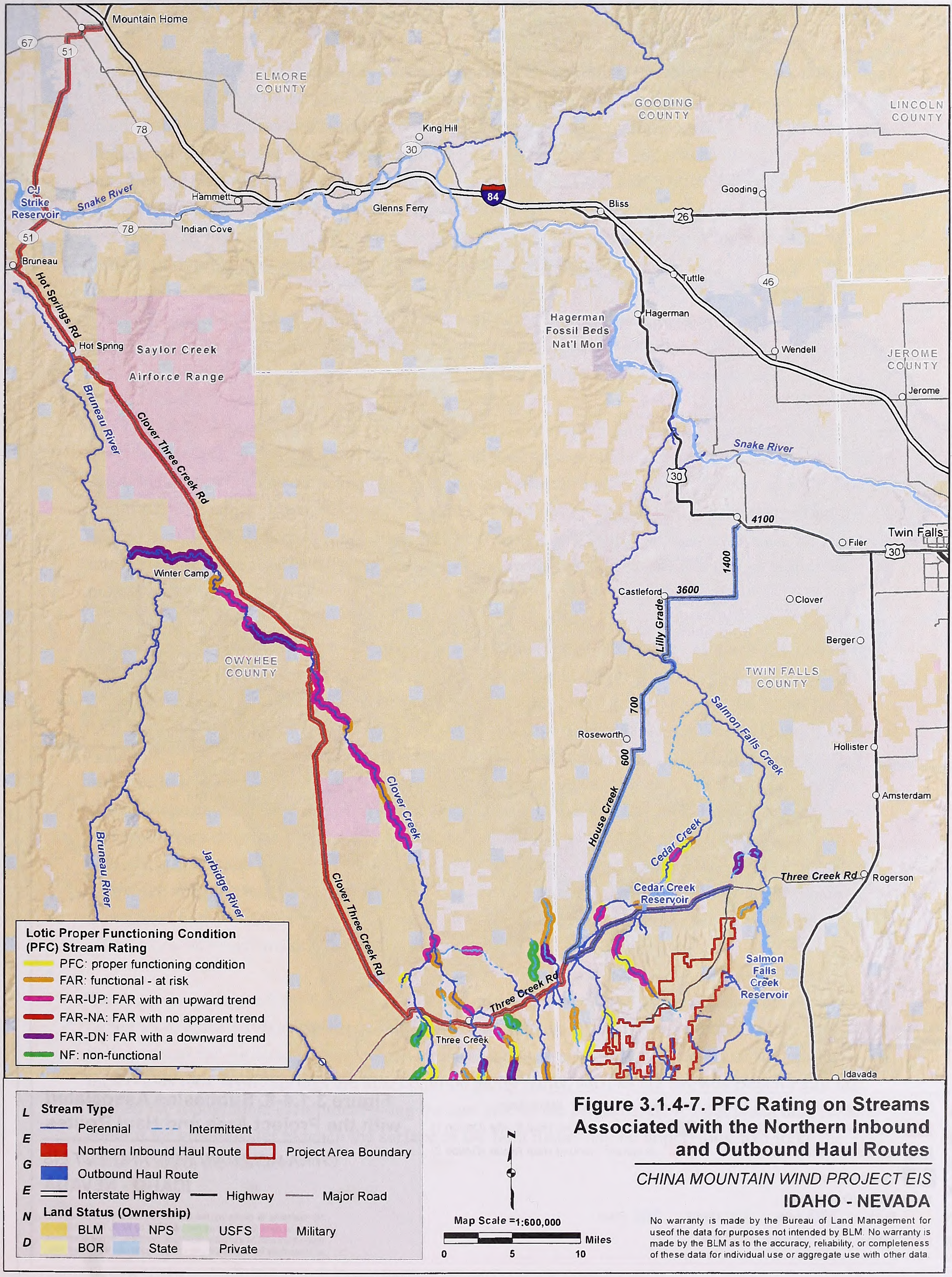

Figure 3.1.4-7. PFC Rating on Streams Associated with the Northern Inbound and Outbound Haul Routes

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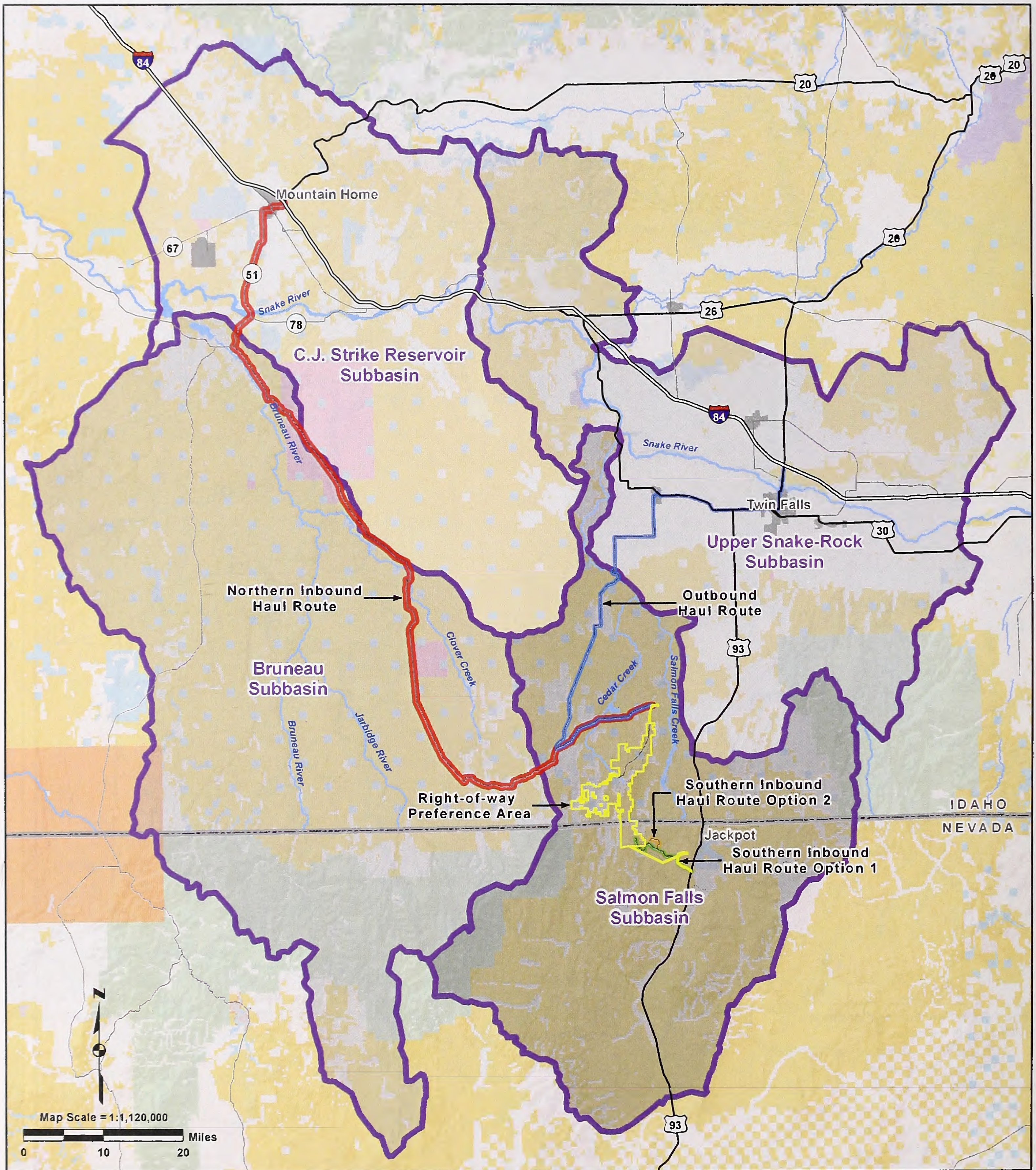

LEGEND

Interstate Highway	Highway	Major Road
Northern Inbound Haul Route	Southern Inbound Haul Route (Option 1)	
Outbound Haul Route	Southern Inbound Haul Route (Option 2)	
Subbasin Boundary		

Land Status (Ownership)

BLM, NPS, USFS, State, Military, Private, BIA

Figure 3.1.4-8. Subbasins Associated with the Project Area and Haul Routes

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Streams in or adjacent to the project area are classified as perennial (flows continuously), intermittent (flows only at certain times when it receives water from springs or from a surface source such as melting snow), or ephemeral (flows only in direct response to precipitation; BLM, 1998). Perennial streams are fed by a combination of snowmelt, rain, springs, and groundwater inflow. Snowmelt provides the majority of the water that flows in the ephemeral and intermittent streams. Flows in all project area streams are highly variable because flows rely on snowmelt and associated groundwater recharge to springs. The highest stream flows occur in the late spring during peak snowmelt, while periods of drought may reduce or stop flow in streams and from springs.

The larger perennial streams in or with headwaters in the project area are: north-flowing House Creek, Cedar Creek, and Whiskey Slough; south-flowing North Fork Salmon Falls Creek and Shack Creek; east-flowing Corral Creek, China Creek, Browns Creek, and Cottonwood Creek.

The project haul routes cross three perennial streams. The northern inbound haul route crosses Clover Creek, while both options of the southern inbound haul route would cross Cottonwood Creek (Figures 3.1.4-4 and 3.1.4-5). The outbound haul route crosses Salmon Falls Creek at the base of Lilly Grade (Figure 3.1.4-5). In addition, Salmon Falls Creek at the Salmon Falls Dam is currently crossed by Three Creek Road. This road is not one of the haul routes; however, it would serve as an access point into the project area for O&M. There are no existing roads that cross perennial creeks within the project area (Figure 3.1.4-4).

Groundwater within the project area occurs in the southernmost part of the Salmon Falls Creek-Rock Creek Aquifer, which is connected to the larger Eastern Snake River Plain Aquifer, located about 30 miles to the north (Crosthwaite, 1969). One livestock supply well exists in the project area, but no well log is on file at Idaho Department of Water Resources. There are no public water supply wells within the project area boundary (Idaho Department of Water Resources, 2009). Groundwater is assumed to be located primarily within the fractured silicic volcanic rocks, and secondarily within alluvial deposits along stream channels. Groundwater in Salmon Falls Creek-Rock Creek Aquifer is recharged from downward percolation of precipitation and snowmelt, runoff from surrounding uplands, and leakage from streams (Crossthwaite, 1969). Groundwater probably moves via fractures within the volcanic rocks that underlie the project area. Groundwater in the project area probably flows from higher-altitude recharge areas towards Cedar Creek and Salmon Falls Creek, and then ultimately northward towards the Snake River.

There are 31 springs within the project area, and an additional 60 springs just outside the project area boundary (Figure 3.1.4-1). Springs commonly occur in areas where water-saturated soil or fractured rock intersect the surface or where water-saturated soil or fractured rock intersect an underlying impervious rock layer. Springs are also common along faults, such as the Browns Bench Fault that formed the topographic escarpment along the east side of the project area. A fault plane may act as a conduit for groundwater to reach the surface or the fault plane may be impervious, and force the water to reach the surface.

Many springs in the project area have been developed for use by livestock. These developments may be as simple as driving a pipe into the slope where a spring occurs. Other spring developments collect water from a spring outlet and pipe it to a trough that is located away from the sensitive riparian area around the spring. Within the project area, spring developments include one reservoir, ten stock water troughs, one water tank, two ponds, and approximately 5 miles of water pipeline (Figure 3.1.4-1).

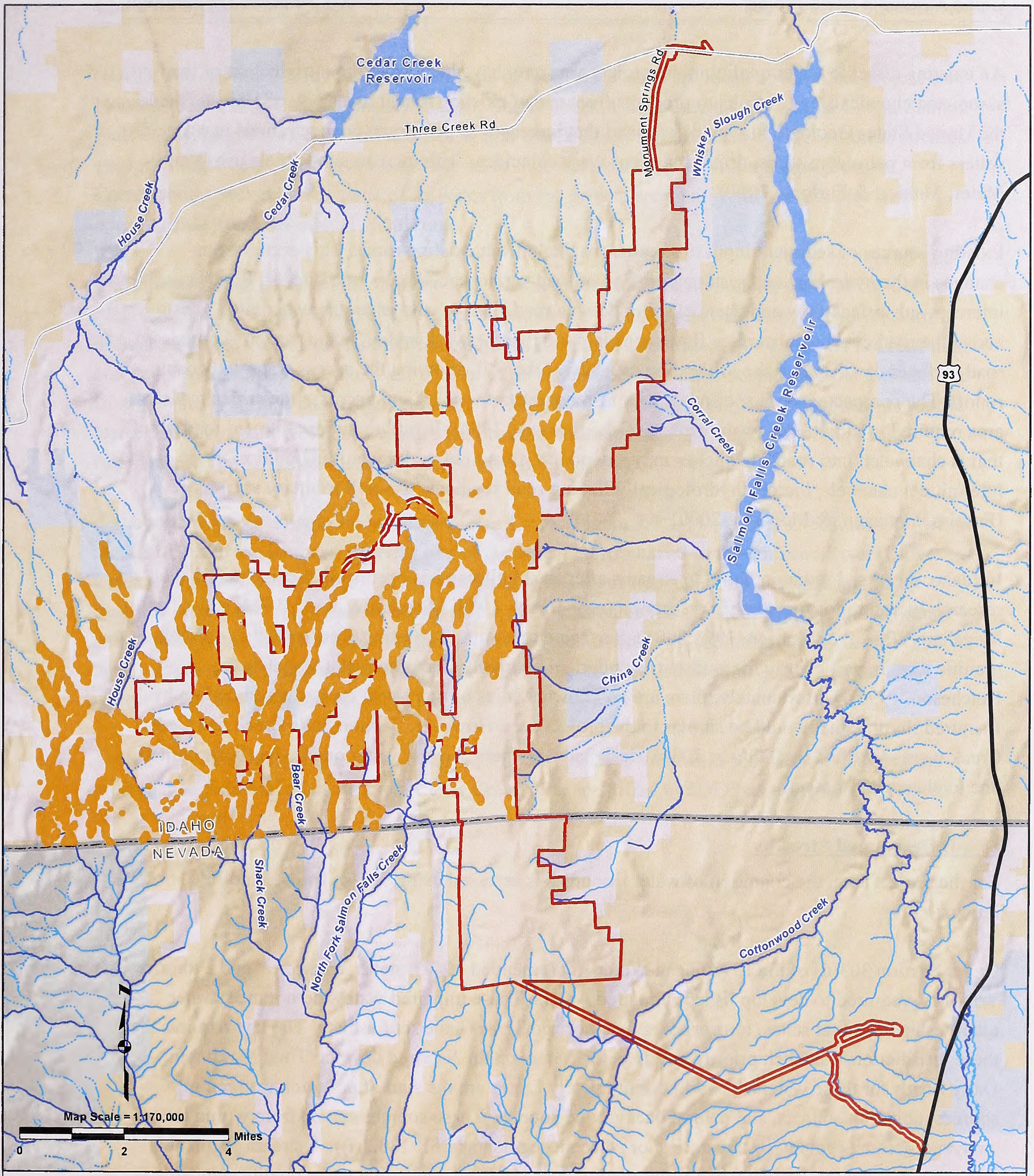
A snowpack layer for the project area was created using Geographic Information System (URS, 2010b) and is depicted in Figure 3.1.4-9. Snowpack areas are an important source of water for springs, seeps, and streams in the project area. Areas of snowpack are unknown for both options of the southern inbound haul route, the northern inbound haul route, and the outbound haul route.

3.1.4.3 Water Quality

As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. The National Pollutant Discharge Elimination System permitting process for Idaho is overseen by the EPA Region 10. By constructing the project, the Applicants would be required to file for Stormwater Construction General National Pollutant Discharge Elimination System Permit from the EPA. This filing includes: a Stormwater Pollution Prevention Plan for the construction site; an endangered species determination for the project site; filing of a Notice of Intent; and implementation and monitoring of the Best Management Practices outlined in the Stormwater Pollution Prevention Plan.

The primary actions and features that are currently affecting water quality within the subbasin are roads, motorized vehicle use, stream crossings, livestock use, wildfire, and other surface disturbing activities. BLM follows current policies to prevent degradation of stream conditions; therefore, stream conditions are likely to be maintained or improved over time.

Water quality in a watershed can be affected by the location and distribution pattern of roads (Jones, Swanson, Wemple, & Snyder, 2000). It has also been affected over the last 40 years by the increase in motorized recreation on public land, especially on public lands in proximity to areas of population growth (Congressional Research Service, 2005). Within the project area, there are approximately 144 miles of existing roads and 95 existing stream crossings, with 88 intermittent stream crossings and 7 perennial stream crossings. The northern inbound haul route has 76 existing stream crossings, with 68 over intermittent streams and 8 over perennial streams. Both options of the southern inbound haul route have 18 existing stream crossings, with 17 over intermittent streams and 1 over a perennial stream (Cottonwood Creek). The outbound haul route has 56 existing stream crossings, with 34 over intermittent streams and 22 over perennial streams.



LEGEND

Project Area Boundary

Snowpack Areas

Stream Type

Perennial | Intermittent

Land Status (Ownership)

BLM | USFS

Private | State

Figure 3.1.4-9. Snowpack Areas within and Near the Project Area

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An existing effect to water quality in the project area may have been from the introduction of road-associated chemicals and petroleum products from use of existing roads. In a study of 10 watersheds, the United States Geologic Survey determined that increases of petroleum concentrations in surface waters from petroleum spills, drips, and seeps were coincident with increases in vehicle use (Van Meter, Mahler, & Furlong, 2000).

Existing sources of sediment input to streams are likely from existing roads. This occurs from changes in the hydrology and resultant erosion of road surfaces, cutbanks, and ditches. Roads can intercept subsurface flow and channel water down a road. This occurs when the water table rises above the road cut and subsurface flow seeps into the road network and drainage system. Compacted road surfaces can decrease the infiltration capacity of the soil, allowing the excess water to become runoff. The compacted surface of roads may also concentrate runoff and decrease the critical source area required to initiate headwater streams (Montgomery, 1994). In addition, concentrated road runoff that is channeled into roadside ditches may extend the stream network by eroding gullies or intermittent channels, thereby hydrologically linking road segments to small tributary streams (Furniss, Flanagan, & McFadin, 2000).

In Idaho, increased sediment input to streams after road building has been well documented in the research literature for forest roads on granite (e.g., Haupt, 1959; Megahan & Kidd, 1972; and Megahan, Wilson, & Monsen, 1991:2001). Surface-erosion problems are severe in highly erodible granitic terrain, particularly for landscapes underlain by highly fractured rock (Megahan & Ketcheson, 1996). Unfortunately, there are no known studies on semi-arid landscapes underlain by fractured rhyolite that would be similar to the project area. However, Salmon Falls Creek and Cedar Creek were identified by IDEQ as 303(d) designated streams because water quality has been limited due to elevated sediment.

303(d) Designated Streams

For the project area, the condition of water resources is assessed using 303(d) listings and PFC ratings.

Under Section 303(d) of the 1972 Clean Water Act (amended 1987); states, territories, and authorized Tribes are required to develop lists of impaired waters. These impaired waters do not meet water quality standards that states, territories, and authorized Tribes have set for them. The law requires that these jurisdictions establish priority rankings for waters on the lists and develop Total Maximum Daily Loads for these waters. Total Maximum Daily Loads are the sum of pollution from point sources, nonpoint sources, and natural background sources. These sources can be from within the analyzed stream segment, its tributaries, or adjacent segments (CFR 130.2(i)). A stream segment is deemed water quality limited when water quality does not meet applicable water quality standards in place at the time of evaluation.

The project area is within the Salmon Falls Subbasin. The Salmon Falls Creek Subbasin Assessment and Total Maximum Daily Loads analysis was performed by IDEQ and approved by the EPA in 2008

(IDEQ, 2007). Nine 303(d) designated streams or their headwaters are located within the project area: House Creek, Cedar Creek, Whiskey Slough, Corral Creek, China Creek, Cottonwood Creek, Salmon Falls Creek, North Fork Salmon Falls Creek, and Shack Creek (Figure 3.1.4-10). All of these streams except Cottonwood Creek have essentially all of their headwater areas within the project area. Cottonwood Creek receives some of its water from the project area, and is also crossed by both options of the southern inbound haul route.

The outbound haul route crosses Salmon Falls Creek at the base of Lilly Grade, south of Castleford, Idaho (Figure 3.1.4-11). Salmon Falls Creek is within the Salmon Falls Subbasin. The lower portion of Salmon Falls Creek has been disconnected from its natural headwaters by Salmon Falls Creek dam and gains water throughout the lower portion of its watershed from water seeping around the dam and from numerous springs and irrigation returns (IDEQ, 2007). The 2004 303(d) listed pollutants for the lower portion of Salmon Falls Creek are temperature, nutrients, and sediment, with rangeland, riparian, and agriculture as the pollutant sources (IDEQ, 2007).

The northern inbound haul route crosses Clover Creek (Figure 3.1.4-11). Clover Creek, also known as the East Fork of the Bruneau River, is one of the perennial tributaries to the Bruneau River. Clover Creek was placed on the 303(d) list in 1996 because sediment was identified as impairing the beneficial uses, with rangeland identified as the pollutant source (IDEQ, 2000). The total maximum daily loads for the Bruneau subbasin shows Clover Creek delisted for sediment (IDEQ, 2000). The most current report available for Idaho is for the year 2008, in which Section 3 of the report lists Clover Creek as unassessed (IDEQ, 2009).

Table 3.1.4-2 summarizes the status of the 303(d) designations for stream segments in and near the project area. Salmon Falls Creek and Cedar Creek were identified by IDEQ as water quality limited due to sediment.

Table 3.1.4-2. Impaired (303[d] designation) Waters Near the Project Area.

Stream Segment	Listed Pollutants
Cedar Creek (reservoir to Salmon Falls Creek)	Temperature Flow Alteration Sedimentation/Siltation
Cedar Creek and Cedar Creek Reservoir	Temperature Sediment/Siltation Excess Nutrients
China Creek, Corral Creek, Whiskey Slough	Temperature Sediment/Siltation Excess Nutrients
Cottonwood Creek	Temperature Bacteria (*E. coli*) Sediment/Siltation Excess Nutrients
House Creek	Temperature Sediment/Siltation Excess Nutrients
North Fork Salmon Falls Creek	Temperature
Salmon Falls Creek (lower)	Temperature Sediment/Siltation Excess Nutrients
Salmon Falls Creek Reservoir	Mercury Excess Nutrients
Salmon Falls Creek (upper)	Temperature Sediment/Siltation Excess Nutrients
Shack Creek	Temperature

Source: IDEQ, 2007; NDEP, 2009

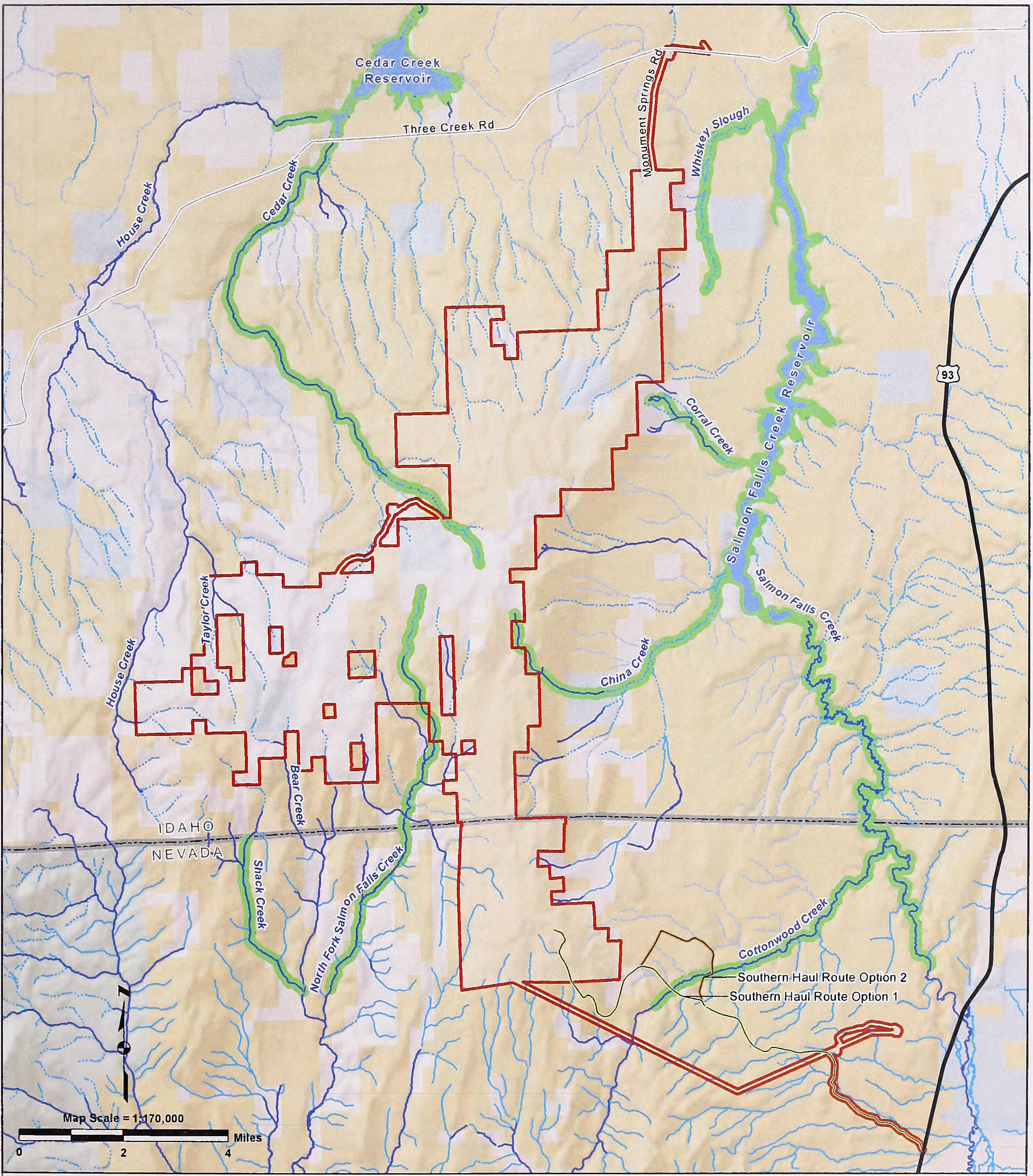

Figure 3.1.4-10. 303(d) Designated Streams Associated with the Project Area and Southern Inbound Haul Routes

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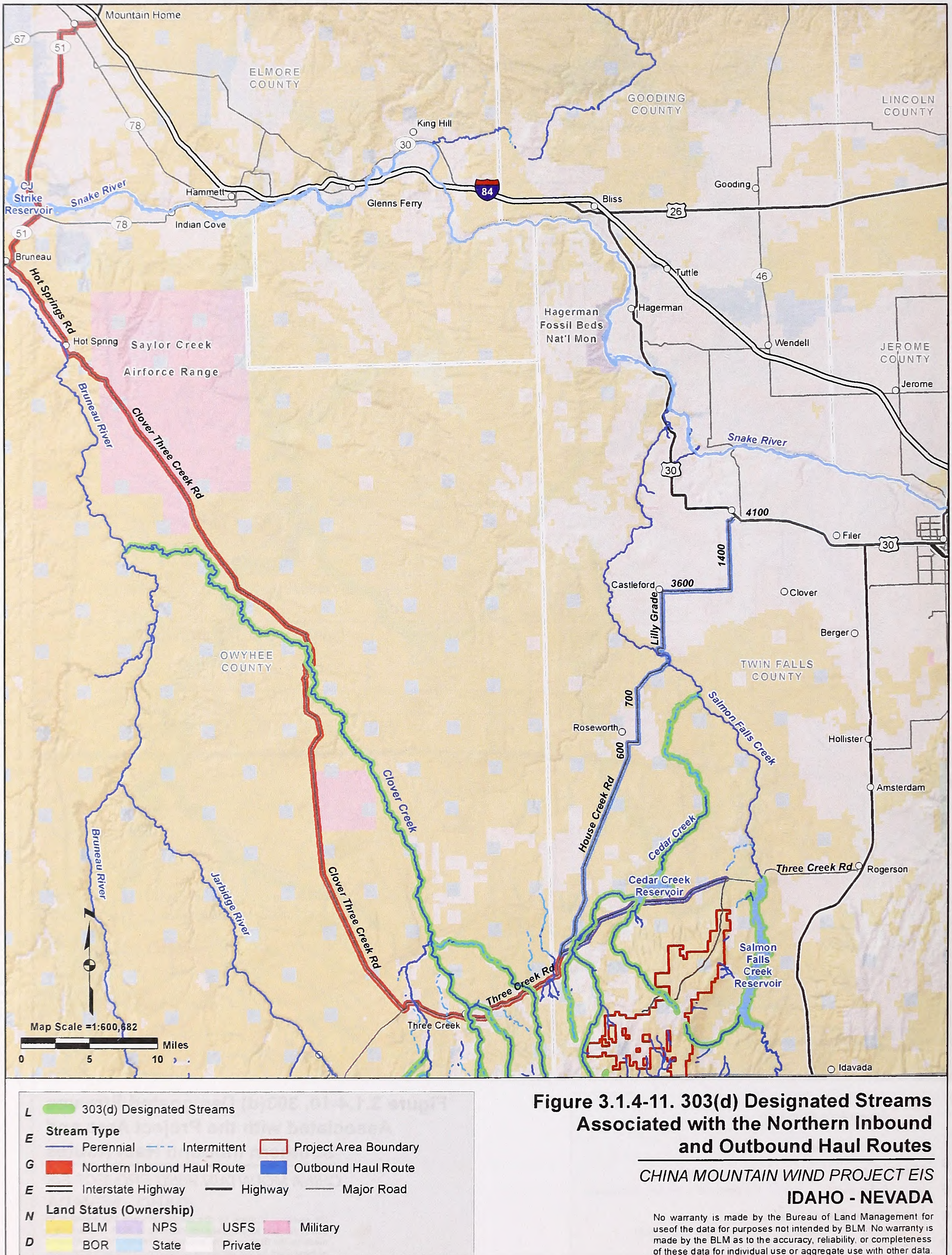

Figure 3.1.4-11. 303(d) Designated Streams Associated with the Northern Inbound and Outbound Haul Routes

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The state of Idaho has designated beneficial uses for 13 water bodies within the Salmon Falls Creek subbasin. Of those 13 water bodies, eight are located within or adjacent to the project area. Table 3.1.4-3 lists each of the eight water bodies along with their beneficial uses. The state of Nevada has not assessed the streams for beneficial uses within or adjacent to the project area.

Table 3.1.4-3. Beneficial Uses of Water Bodies within and near the Project Area.

Water Body	Beneficial Use
Cedar Creek	Cold water, secondary contact recreation, and agricultural water supply
Cedar Creek Reservoir	Cold water, secondary contact recreation, agricultural water supply
China Creek	Cold water, secondary contact recreation, and agricultural water supply
China Creek, Browns Creek	Cold water, secondary contact recreation, and agricultural water supply
Clover Creek	Cold water, salmonid spawning
Cottonwood Creek	Cold water, secondary contact recreation, and agricultural water supply
Salmon Falls Creek (assessment unit ID17040213SK009_06)	Cold water, primary contact recreation, secondary contact recreation, and agricultural water supply
Salmon Falls Creek (assessment unit ID17040213SK001_06)	Cold water, primary contact recreation, secondary contact recreation, and agricultural water supply
Salmon Falls Creek Reservoir	Cold water, primary contact recreation, salmonid spawning, and agricultural water supply

Source: IDEQ, 2007.

3.1.5 NOISE

To assess the issue raised by the public related to noise (Section 1.6), the following presents estimates of the existing conditions. The existing conditions are characterized by the representative pre-project outdoor ambient sound environment and it is expected contributing sources.

3.1.5.1 Acoustics Fundamentals

For purposes of document brevity, it is assumed the reader is familiar with basic acoustical terms, descriptors, and concepts that should help frame the discussion of noise in this section. Consult Appendix 3B or industry-accepted reference texts such as *Noise & Vibration Control Engineering* (Beranek & Ver, 1992) and *Engineering Noise Control* (Bies & Hansen, 2003) for an introduction to acoustics fundamentals.

3.1.5.2 Surrounding Land Uses and Potential Noise-Sensitive Receivers

The land uses surrounding the project area are rural in nature. Recreational uses include hunting, dispersed camping, off-highway vehicle (OHV) travel, and rock hounding opportunities.

Residential communities and schools, hospitals, and other noise-sensitive receivers are considerably distant from the project area, with towns such as Jackpot, Nevada and Rogerson, Idaho located approximately 8 miles east of the nearest proposed wind turbine.

Sparsely populated or potentially populated places nearby or adjacent to the northern inbound haul route of Hot Springs Road, Clover Three Creek Road and Three Creek Road include Bruneau, Hot Springs, Winter Camp, and Three Creek. Along the outbound haul route of House Creek Road and Lilly Grade, potentially populated places nearby or adjacent include Castleford and Roseworth.

3.1.5.3 Area Wildlife

Several groups of wildlife use portions of the project area either year-round or during specific seasons of the year and include big game, raptors, and upland game birds (Section 3.2.2). Many of these species rely on meaningful sounds for survival and can be sensitive to ambient noise introduced into the environment (Bowles, 1995). These animals also use habitat in the vicinity of the project area.

3.1.5.4 Ambient Sound in the Project Vicinity

Ambient Noise Estimates

The analysis area for noise includes the project area and additional area bounded by a perimeter approximately 2 miles from the furthest extent of project layout and the inbound and outbound haul routes. In the absence of measurement data, and due to the project being a considerable distance from major roadways, the existing sound level environment in the vicinity of the project was coarsely estimated with a population density method published by the Federal Transit Administration in its Transit Noise and Vibration Impact Assessment (Federal Transit Administration [FTA], 2006). This section presents the general assessment of existing noise exposure based on the population density per square mile. The project site is within Twin Falls County, Idaho, and Elko County, Nevada. According to the U.S. Census Bureau, the population per square mile for each county in 2006 was less than 100. Table 3.1.5-1 indicates the estimated sound level.

Table 3.1.5-1. Estimated Existing Ambient Sound Levels within the Project Area.

	L_{eq} Day	L_{eq}[1] Evening	L_{eq} Night	L_{dn}[2]
Average Sound Level (dBA)	35	30	25	35

[1]L_{eq} – equivalent sound level
[2]L_{dn} – Day-Night Average Noise Level
Source: FTA, 2006

The estimated levels in Table 3.1.5-1 are representative, and would vary with conditions and the proximity of stationary and transient noise sources at an actual location. These estimates also appear to be consistent with similar soundscapes as described in a published study of sound levels measured at various U.S. National Parks. For example, leaves rustling in a remote area of Canyonlands National Park result in a 20 dBA sound level, while crickets at a distance of 5 meters from a measurement location in Zion National Park registered 40 dBA (Harmon, 2005).

For purposes of noise analysis, the project area may also include a southern inbound haul route and staging area that would traverse an area between the southern end of the project and the nearby highway (i.e., United States Highway Route 93 [US-93] to the east of the project). Existing sound levels in this area are expected to be similar to the estimates presented in Table 3.1.5-1, up to a distance from US-93 where its traffic noise would be considered dominant and exhibit noise levels that would increase with decreasing distance to the roadway.

While the project alternatives also include the aforementioned inbound and outbound haul routes along established roadways north of the project, these routes (and the communities that are in reasonable proximity) are expected to have existing noise levels that correspond with current traffic volumes and vehicle types and may be higher than the levels presented in Table 3.1.5-1.

Anticipated Noise Sources

The project area is remote from metropolitan centers, and as described previously, is likely to have a relatively low average ambient noise level. However, contributors to this ambient level are expected to include the following:

- Passenger vehicle, bus and truck traffic on US-93, which ranges from 6 to 8 miles distance to the east.
- Commercial and civilian aircraft overflights, which follow Vector 293 that is generally positioned between the project area and the Salmon Falls Creek Reservoir. Minimum aircraft altitude is understood to be about 9,000 feet (National Interagency Airspace, 2009).
- Wind-generated turbulence, resulting from wind interaction with vegetative ground cover and exposed rocky surfaces.
- Occasional OHV traffic, associated with recreational activities that use unimproved roads, which traverse the project area.
- Occasional vehicle traffic, associated with travel on the roadways north of the project that are considered for inbound and outbound haul routes.

3.2 BIOLOGICAL RESOURCES

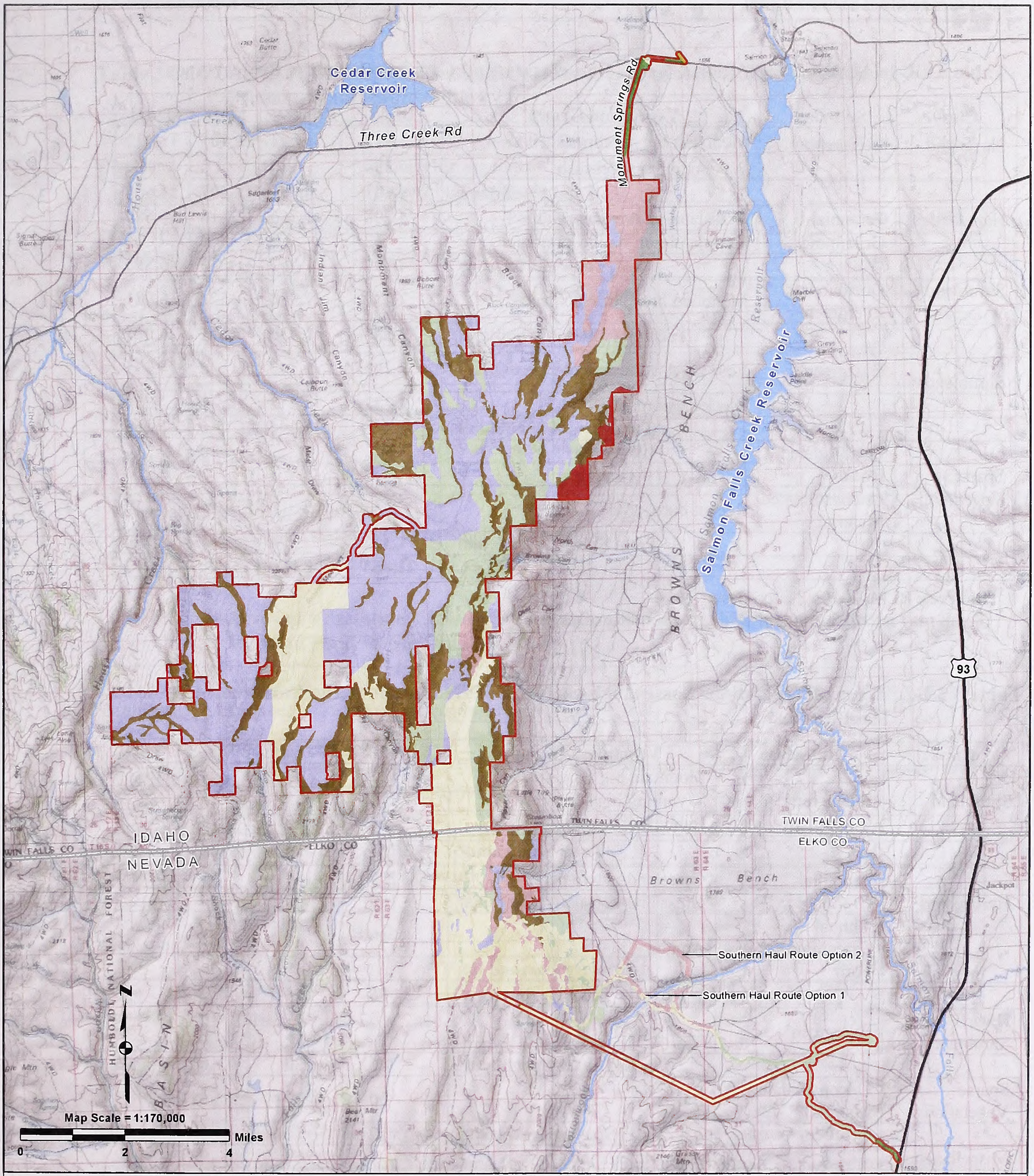
3.2.1 VEGETATION

This section describes existing vegetation in the project area within a 250-foot buffer of the northern inbound haul route and both options of the southern inbound haul route. The vegetation resource is presented in three categories: uplands, noxious weeds and invasive plants, and special status plants. Riparian and wetlands are described under Water Resources, Section 3.1.4. The vegetation in these areas is predominantly comprised of upland communities while riparian and wetland communities make up a minor portion.

3.2.1.1 Uplands

The upland vegetation data presented in this document are based on the 2010 vegetation classification and map from the Jarbidge Field Office (BLM, 2010a) in conjunction with 2004 and 2009 aerial imagery (United States Department of Agriculture [USDA], 2004; USDA, 2009), the Murphy Complex Burn Severity dataset (USFS, 2009), and the 2010 China Mountain fire dataset (BLM, 2010b). Vegetation communities in the Jarbidge Field Office vegetation dataset were defined by dominant overstory and understory species based on cover, and follow national vegetation classification standards (Grossman et al., 1998). Vegetation communities are further organized into classes and sub-classes according to national standards (Grossman et al., 1998). One exception to the national standard, driven by sage-grouse management objectives within the Jarbidge Field Office, was made in the classification of sagebrush-dominated evergreen shrublands; communities with 10 percent or more shrub cover (the threshold of suitability for sage-grouse) versus the national standard of 25 percent or more shrub cover were included (Wisdom et al., 2000). For analysis purposes, vegetation communities were grouped into vegetation groups based on dominant vegetation and structure. Vegetation communities that make up each vegetation group are described below. Nomenclature follows United States Department of Agriculture Plants Database (2010) and the *Idaho BLM special status plant list* (BLM, 2010c).

Private and public land in the Wells Field Office were assigned vegetation groups, consistent with the vegetation groups of the Jarbidge Field Office, based on 2004 and 2009 aerial imagery (USDA, 2004; USDA, 2009) and recent fire datasets (USFS, 2009; BLM, 2010b). Areas that burned with moderate or high severity during the 2007 Murphy Complex Fires were mapped as grassland-native perennial vegetation group. The area that burned during the 2010 China Mountain fire was mapped as recent burn. Six classes, seven sub-classes, and 13 vegetation groups are mapped for the project area, northern inbound haul route, and both options of the southern inbound haul route combined (Tables 3.2.1-1 through 3.2.1-4). Existing vegetation groups in the project area and along both options of the southern inbound haul route are displayed in Figure 3.2.1-1. Vegetation along the northern inbound haul route is not displayed in a figure due to scale.



LEGEND

Project Area Boundary

Vegetation Group

Black Sagebrush	Mountain Big Sagebrush
Breaks	Mt Brush or Woodland
Grassland - Native Perennial	Recent Burn (2010)
Grassland - Non-native Perennial	Wyoming Big Sagebrush
Low Sagebrush	

Figure 3.2.1-1. Existing Vegetation for Project Area and Southern Inbound Haul Routes

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Table 3.2.1-1. Acres of Vegetation Classes, Sub-classes, and Groups within the Project Area.

Class	Sub-class	Vegetation Group[1]	BLM	Private	State	Total
Shrubland	Evergreen	Mountain big sagebrush	5,912	4,093	1,407	11,412
		Wyoming big sagebrush	189	0	0	189
		Total Shrubland[2]	**6,101**	**4,093**	**1,407**	**11,601**
Herbaceous	Perennial Graminoid	Grassland-native perennial	4,798	1,766	16	6,580
		Grassland-non-native perennial	12	0	0	12
		Total Herbaceous[2]	**4,810**	**1,767**	**16**	**6,593**
Shrubland/ Woodland	Deciduous/ Evergreen	Mountain brush or woodland	3,580	1,930	571	6,081
		Total Shrubland/Woodland[2]	**3,580**	**1,930**	**571**	**6,081**
Dwarf Shrubland	Evergreen	Low sagebrush	3,188	1,142	6	4,335
		Black sagebrush	2,232	2	0	2,234
		Total Dwarf Shrubland[2]	**5,419**	**1,144**	**6**	**6,569**
Sparse Vegetation	Consolidated Rocks	Breaks	829	6	1	836
	Unconsolidated Material	Recent burn	313	0	0	313
		Total Sparse Vegetation[2]	**1,142**	**6**	**1**	**1,150**
		TOTAL[2]	**21,053**	**8,940**	**2,000**	**31,992**

[1] **Sources:** BLM, 2010a; NatureServe, 2010.
[2] Totals may not appear to add up due to rounding of acres in tables.

Table 3.2.1-2. Acres of Vegetation Classes, Sub-classes, and Groups along the Northern Inbound Haul Route.

Class	Sub-class	Vegetation Group[1]	Federal[2]	Private	State	Total
Shrubland	Evergreen	Mountain big sagebrush	122	43	0	165
		Wyoming big sagebrush	1,722	365	25	2,112
		Rabbitbrush	413	15	0	428
		Total Shrubland[3]	**2,257**	**423**	**25**	**2,705**
Herbaceous	Perennial Graminoid	Grassland-native perennial	755	182	56	993
		Grassland-non-native perennial	1,169	0	140	1,309
	Annual Graminoid or Forb	Annual	172	62	77	311
		Total Herbaceous[3]	**2,096**	**244**	**273**	**2,613**
Dwarf Shrubland	Evergreen	Low sagebrush	45	50	0	95
		Total Dwarf Shrubland[3]	**45**	**50**	**0**	**95**
Sparse Vegetation	Unconsolidated Material	Barren	0	11	0	12
		Total Sparse Vegetation[3]	**0**	**11**	**0**	**12**
Miscellaneous		Agricultural land	3	269	0	272
		Total Miscellaneous[3]	**3**	**269**	**0**	**272**
		TOTAL[3]	**4,402**	**997**	**298**	**5,697**

[1] **Sources:** BLM, 2010a; NatureServe, 2010.
[2] Federal land includes BLM and military land.
[3] Totals may not appear to add up due to rounding of acres in tables.

Table 3.2.1-3. Acres of Vegetation Classes, Sub-classes, and Groups along the Southern Inbound Haul Route Option 1.

Class	Sub-class	Vegetation Group[1]	BLM	Private	State	Total
Shrubland	Evergreen	Mountain big sagebrush	31	0	0	31
		Wyoming big sagebrush	47	0	0	47
		Total Shrubland[2]	**78**	**0**	**0**	**78**
Herbaceous	Perennial Graminoid	Grassland-native perennial	224	35	0	259
		Total Herbaceous[2]	**224**	**36**	**1**	**259**
Dwarf Shrubland	Evergreen	Low sagebrush	297	22	0	318
		Black sagebrush	81	12	0	97
		Total Dwarf Shrubland[2]	**381**	**34**	**0**	**415**
Sparse Vegetation	Consolidated Rocks	Breaks	1	1	0	2
		Total Sparse Vegetation[2]	**2**	**1**	**0**	**2**
		TOTAL[2]	**683**	**70**	**1**	**753**

[1] **Sources:** BLM, 2010a; NatureServe, 2010.
[2] Totals may not appear to add up due to rounding of acres in tables.

Table 3.2.1-4. Acres of Vegetation Classes, Sub-classes, and Groups along the Southern Inbound Haul Route Option 2.

Class	Sub-class	Vegetation Group[1]	BLM	Private	State	Total
Shrubland	Evergreen	Mountain big sagebrush	31	0	0	31
		Wyoming big sagebrush	48	0	0	48
		Total Shrubland[2]	**79**	**0**	**0**	**79**
Herbaceous	Perennial Graminoid	Grassland-native perennial	216	26	0	242
		Total Herbaceous[2]	**216**	**26**	**0**	**242**
Dwarf Shrubland	Evergreen	Low sagebrush	296	22	0	318
		Black sagebrush	199	3	0	203
		Total Dwarf Shrubland[2]	**495**	**25**	**0**	**520**
Sparse Vegetation	Consolidated Rocks	Breaks	12	0	0	12
		Total Sparse Vegetation[2]	**12**	**0**	**0**	**12**
		TOTAL[2]	**802**	**51**	**0**	**853**

[1] **Sources:** BLM, 2010a; NatureServe, 2010.
[2] Totals may not appear to add up due to rounding of acres in tables.

Mountain Big Sagebrush

Mountain big sagebrush (*Artemisia tridentata* var. *vaseyana*) vegetation group forms large, continuous stands on mid-elevation slopes and foothills and can range from steep slopes to ridgetops with deep to shallow rocky soil (NatureServe, 2010). Vegetation communities include mountain big sagebrush/bluebunch wheatgrass (*Pseudorogneria spicata*) - Idaho fescue (*Festuca idahoensis)*, and mountain big sagebrush/Idaho fescue (BLM, 2010a). Mountain big sagebrush/bluebunch wheatgrass-Idaho fescue has a shrub layer of greater or equal to 10 percent cover, or is the dominant vegetation class, and is dominated by mountain big sagebrush. The understory is co-dominated by bluebunch

wheatgrass and Idaho fescue (BLM, 2010a). Mountain sagebrush/Idaho fescue has a shrub layer of greater or equal to 10 percent cover, or is the dominant vegetation class, and is dominated by mountain big sagebrush; pockets of low sagebrush (*Artemisia arbuscula*) may be present. Idaho fescue is the dominant understory species (BLM, 2010a).

Wyoming Big Sagebrush

Vegetation communities include Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*)/Sandberg bluegrass (*Poa secunda*) and Wyoming big sagebrush/Idaho fescue (BLM, 2010a). Wyoming big sagebrush/Sandberg bluegrass has a shrub layer with greater or equal to 10 percent cover, or is the dominant vegetation class, and is dominated by Wyoming big sagebrush. Sandberg bluegrass is the dominant understory species (BLM, 2010a). Wyoming big sagebrush/Idaho fescue has a shrub layer with greater or equal to 10 percent cover, or is the dominant vegetation class, and is dominated by Wyoming big sagebrush. Idaho fescue is the dominant understory species (BLM, 2010a).

Rabbitbrush

Vegetation communities include rabbitbrush (*Chrysothamnus* or *Ericameria sp.*)/bluebunch wheatgrass, rabbitbrush/intermediate wheatgrass (*Thinopyrum intermedium*), rabbitbrush/Sandberg bluegrass, and rabbitbrush/crested wheatgrass (*Agropyron cristatum*; BLM, 2010a). Rabbitbrush/bluebunch wheatgrass has a shrub layer of greater or equal to 10 percent cover, or is the dominant vegetation class, and is dominated by rabbitbrush. Bluebunch wheatgrass or bluebunch-squirreltail (*Elymus elymoides*) hybrid dominates the understory. Rabbitbrush/intermediate wheatgrass, rabbitbrush/Sandberg bluegrass, and rabbitbrush/crested wheatgrass are similar; however, the understory is dominated by intermediate wheatgrass, Sandberg bluegrass, or crested wheatgrass (BLM, 2010a).

Grassland-native Perennial

This early seral vegetation group is dominated by perennial native bunchgrasses and occurs where wildfire or another disturbance removed or greatly reduced the shrub canopy cover (BLM, 2010d, p. 3-15). It is the dominant plant group in the project area post wildfire. Vegetation communities include bluebunch wheatgrass or Idaho fescue, where one of these grass species is dominant and shrub species typically have less than 10 percent cover (BLM, 2010a).

Grassland-non-native Perennial

Vegetation communities include the non-native perennial grasses crested wheatgrass or intermediate wheatgrass. One of these grass species is dominant and shrub species typically have less than 10 percent cover (BLM, 2010a).

Annual

This group consists of one vegetation community that is dominated (50 percent or more cover) by one or a mix of annual species, such as Russian thistle (*Salsola kali*), cheatgrass (*Bromus tectorum*), and/or tumblemustard (*Sisymbrium altissimum*; BLM, 2010a).

Mountain Brush or Woodland

Mountain brush or woodland includes deciduous mountain brush, evergreen mountain brush, quaking aspen (aspen; *Populus tremuloides*), and curl-leaf mountain mahogany (mountain mahogany; *Cercocarpus ledifolius*; BLM, 2010). Deciduous mountain brush has a shrub layer of greater or equal to 25 percent cover, or is the dominant vegetation class, and is dominated or co-dominated by willow (*Salix sp.*), antelope bitterbrush (*Purshia tridentata*), snowberry (*Symphoricarpos sp.*), chokecherry (*Prunus virginiana*), redosier dogwood (*Cornus sericea*), rose (*Rosa woodsii)*, or shrubby aspen less than 15 feet tall. Evergreen mountain brush has a shrub layer greater or equal to 25 percent cover, or is the dominant vegetation class, and is dominated or co-dominated by ceanothus (*Ceanothus velutinus*) and subalpine sagebrush (*Artemisia tridentata* ssp. *spiciformis*) or co-dominated by bitterbrush and mountain big sagebrush or basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*). Aspen has a tree layer of between 25 and 60 percent cover, or is the dominant vegetation class, and is dominated by aspen greater than 15 feet tall. Mountain mahogany has a tree layer of between 25 and 60 percent cover, or is the dominant vegetation class, and is dominated by mountain mahogany (BLM, 2010a).

Low Sagebrush

The low sagebrush group is typically found in shallow, rocky clay soils with a high volume of gravel (NatureServe, 2010). Vegetation communities include low sagebrush/Idaho fescue, low sagebrush/Sandberg bluegrass, and low sagebrush/squirreltail (BLM, 2010a). Each community has a shrub layer with equal or greater than 10 percent cover, or is the dominant vegetation class, and is dominated by low sagebrush or early sagebrush (*Artemisia arbuscula* ssp. *longiloba*); pockets of mountain big sagebrush may be present. Idaho fescue, Sandberg bluegrass, or squirreltail are the dominant understory species (BLM, 2010a).

Black Sagebrush

The black sagebrush (*Artemisia nova*) vegetation group is typically found on well-drained slopes and ridges which are often the driest habitats of all sagebrush dominated groups (NatureServe, 2010). Vegetation communities include black sagebrush/Sandberg bluegrass, black sagebrush/bluebunch wheatgrass, and black sagebrush/crested wheatgrass (BLM, 2010a). Black sagebrush/Sandberg bluegrass has a shrub layer with equal or greater than 10 percent cover, or is the dominant vegetation class, and is dominated by black sagebrush or early sagebrush; pockets of mountain big sagebrush may be present. Sandberg bluegrass dominates the understory. Black sagebrush/bluebunch wheatgrass is similar to black sagebrush/Sandberg bluegrass but bluebunch wheatgrass, Idaho fescue, or Thurber's needlegrass (*Achnatherum thurberianum*) dominate or co-dominate the understory. Black sagebrush/crested wheatgrass is also similar to black sagebrush/Sandberg bluegrass but crested wheatgrass dominates the understory (BLM, 2010a).

Breaks

Breaks are typically found on rocky breaks of canyon rims and are characterized by having less than 10 percent vegetation cover (BLM, 2010a).

Recent Burn

Recent burn areas have burned within the last 2 years and the vegetation community is undeterminable (BLM, 2010a).

Barren

Areas with less than 10 percent vegetation cover, but not classified as breaks, recent burn, or sand dune (BLM, 2010a).

Agricultural Land

Land has been converted to cropland and is dominated by agricultural species (BLM, 2010a).

The vegetation within the project area and along the northern inbound haul route and both options of the southern inbound haul route is diverse, occurring at elevations ranging from 2,580 to 7,740 feet and adapted to the high desert climate that is typified by hot dry summers and cold winters. Elevation of the project area and southern inbound haul routes ranges from 5,200 to 7,740 feet and of the northern inbound haul route ranges from 2,580 to 5,200 feet. Vegetation is primarily influenced by wildfires and fire rehabilitation, livestock grazing, motorized vehicles use with cross-country use in particular, noxious weed and invasive plant introduction and spread, and weather (BLM, 2010d, p. 3-13; BLM, 2007, p. 85).

Vegetation occurs in a state of transition or succession due to various types of natural or anthropogenic disturbances (Grossman et al., 1998). Potential natural vegetation or community is the vegetation structure that would become established if all succession were completed, in the absence of anthropogenic disturbance, resulting in climax or mature vegetation communities (Grossman et al., 1998, p. 7). Succession or seral status occurs over time and is the process of soil and plant community development as a result of interactions of climate, soil development, plant growth, and natural disturbances (BLM, 2001, p. 19). Succession or seral status is described as early, mid, late, or potential natural vegetation (BLM, 2001, p. 45). In general, grassland-native perennial corresponds to early seral status and shrublands and dwarf shrublands correspond to later seral stages (BLM, 2010d, p. 3-54).

To approximate trend in the transition of vegetation, existing vegetation can be compared to potential natural revegetation. Prior to 2007, much of the project area was near potential natural vegetation (BLM, 2007, p. 97). However, a small northeastern portion of the project area was burned in 2010 and is classified as recent burn. Another part of the project area burned during the 2007 Murphy Complex Fires along the border of Idaho and Nevada. Some of this area, primarily on the Nevada side, was reseeded aerially after the wildfire (Section 3.3.10). Much of the area that burned in the

project area in 2007 has regenerated and consists of the grassland-native perennial vegetation group and is considered early seral. See Section 3.3.10 for discussion about Fire and Fuels Management.

Wyoming big sagebrush is the dominant vegetation group along the northern inbound haul route where elevation is low, followed by grassland-non-native perennial and grassland-native perennial (Table 3.2.1-2). The elevation increases as you enter the project area and the vegetation group's transition. Mountain big sagebrush is the most prevalent vegetation group in the project area, followed by grassland-native perennial, mountain brush or woodland, and low sagebrush (Table 3.2.1-1). A few areas are classified as non-vegetated breaks (less than 10% vegetation cover), particularly in the steeper areas in the eastern portion of the project area. Low sagebrush is the most prevalent vegetation group along the southern inbound haul route option 1, followed by grassland-native perennial and black sagebrush (Table 3.2.1-3). Low sagebrush is the most prevalent vegetation community along the southern inbound haul route option 2, followed by grassland native perennial and black sagebrush (Table 3.2.1-4).

3.2.1.2 Noxious Weeds and Invasive Plants

'Noxious' is a legal designation given by Directors of State Departments of Agriculture to any plant having the potential to cause injury to public health, crops, livestock, land or other property (Idaho Statute 22-2402, Nevada Revised Statutes 555.005). Similarly, invasive plants are non-native species whose proliferation is likely to cause economic or environmental harm or impact human health (Executive Order 13112). Noxious weeds and invasive plants are highly competitive and persistent, germinate under a wide variety of conditions, and often exploit/colonize disturbed ground. Because these species are often introduced, they lack natural control agents and frequently escape herbivory, factors that typically regulate native species. As a result, these species often rapidly increase in distribution and abundance (Keane & Crawley, 2002). Noxious weeds and invasive plants can displace native plants, which can degrade wildlife habitat, reduce recreational opportunities, and impact water quality, runoff, sedimentation, and wildfire regime (BLM, 2007).

Research has shown that roads are a primary pathway for plant invasions into arid and semi-arid ecosystems (Brooks & Lair, 2005). Vehicles and people serve as dispersal vectors for noxious weeds and invasive plants (Wichmann et al., 2009; Gelbard & Belnap, 2003; Clifford, 1959) and disturbances within vehicular route corridors facilitate establishment of invasive plants (Greenberg, Crownover, & Gordon, 1997). The results of a study by Clifford (1959) suggest that plant species with small seeds have a better chance of dispersal by vehicles than large-seed species. Roads fragment vegetation, resulting in a variety of effects, including changes in vegetation and encroachment of non-native and invasive plant species (Johnson, 2008; Ouren et al., 2007). Parendes and Jones (2000) found exotic species were more frequent along high-use than low-use roads.

Nine Idaho and/or Nevada noxious weed species have been documented within a 5-mile buffer of the project area and haul routes (Table 3.2.1-5, Figure 3.2.1-2a; Figure 3.2.1-2b; BLM, 2005; BLM, 2002). Several of these documented locations have been chemically treated (BLM, 2005).

Invasive annual plants are also known to occur within the project area and along the haul routes. Cheatgrass, clasping pepperweed (*Lepidium perfoliatum*), bur buttercup (*Ceratocephala testiculata*), and tall tumblemustard are the most common annual invasive plants in and near slickspots (slickspot peppergrass [*Lepidium papilliferum*] habitat) along the northern inbound haul route (Colket, 2009). Halogeton (*Halogeton glomeratus*) is known to occur in Idaho within a 5-mile buffer of the project area (BLM, 2005). An annual vegetation community type has been mapped by the Jarbidge Field Office that includes cheatgrass, Russian thistle, or tall tumblemustard as dominants; however, it is only mapped on a small portion (approximately 5%) of the northern inbound haul route (Table 3.2.1-2; BLM, 2010a).

Table 3.2.1-5. Idaho and/or Nevada Noxious Weeds Identified within a 5-Mile Buffer of the Project Area and Haul Routes.

Scientific Name[1]	Common Name	Project Area	Northern Inbound Haul Route	Southern Inbound Haul Route		Outbound Haul Route
				Option 1	Option 2	
Acroptilon repens	Russian knapweed	Idaho				Idaho
Cirsium arvense	Canada thistle	Idaho				
Centaurea diffusa	Diffuse knapweed	Idaho	Idaho			Idaho
Centaurea stoebe	Spotted knapweed	Idaho				
Chondrilla juncea	Rush skeletonweed		Idaho			Idaho
Isatis tinctoria	Dyer's woad	Idaho				
Onopordum acanthium	Scotch thistle	Nevada	Idaho	Nevada	Nevada	Idaho
Potentilla recta	Sulfur cinquefoil	Nevada		Nevada	Nevada	
Tamarix parviflora	Saltcedar	Idaho	Idaho		Idaho	Idaho

[1] **Sources:** BLM, 2005; BLM, 2002

Annual species, particularly cheatgrass, are common invaders of burned and disturbed areas (Pellant, 1996; Young & Clements, 2005). Areas mapped as grassland-native perennial occur where wildfire or another disturbance removed or greatly reduced the shrub canopy cover (BLM, 2010d, p. 3-15) and may be more susceptible to colonization by noxious weeds and invasive plants due to lack of ground cover and native competitors. Most areas that burned during the Murphy Complex fires in 2007 have come back as grassland-native perennials. Recent burn areas may be susceptible to noxious weeds and invasive plants (Pellant, 1996) due to lack of ground cover and native competitors. Noxious weeds and invasive plants can spread rapidly on disturbed sites, and can also invade communities in high ecological condition (Young & Clements, 2005).

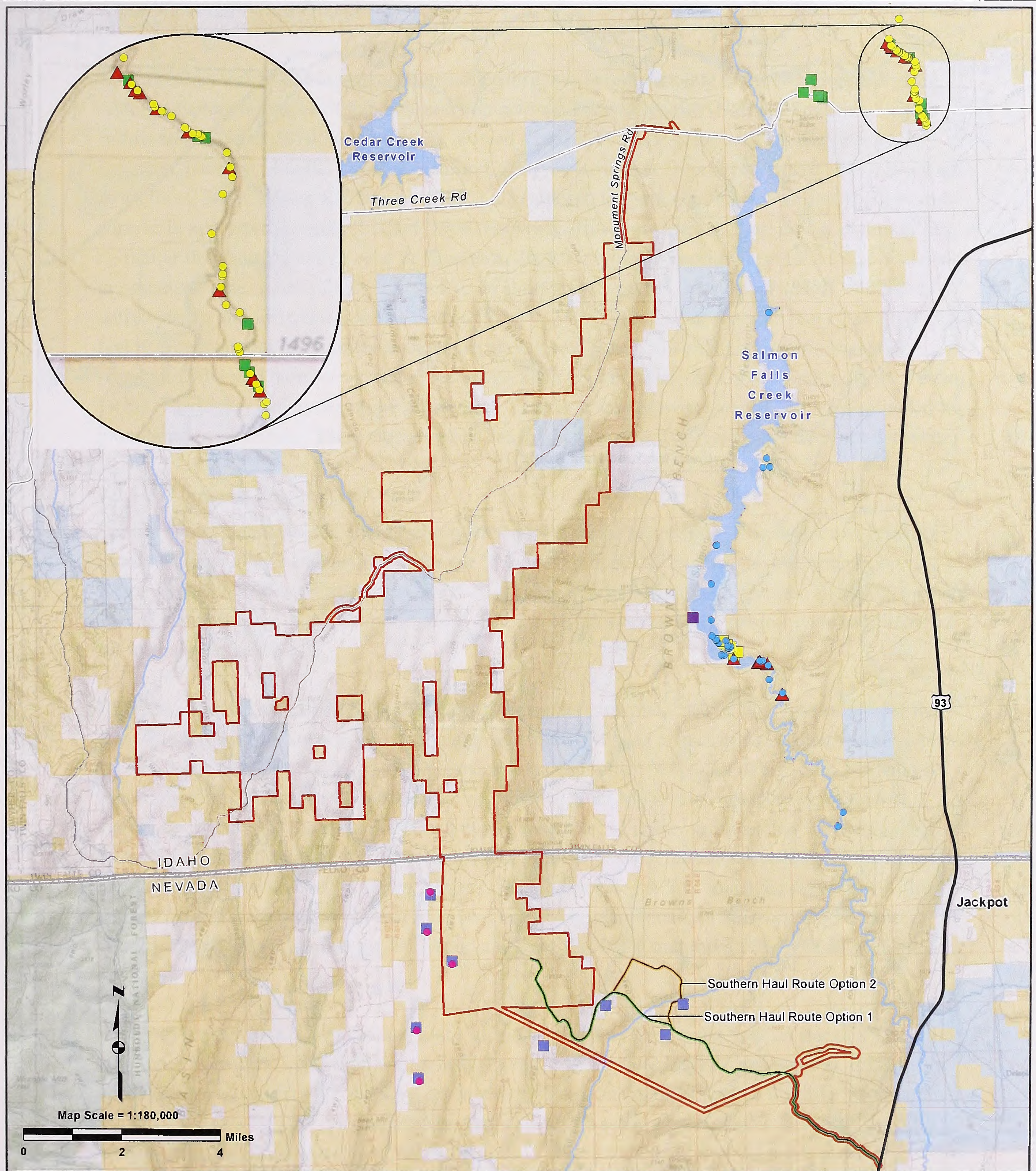

Figure 3.2.1-2a. Noxious Weed Locations: Project Area and Southern Inbound Haul Routes

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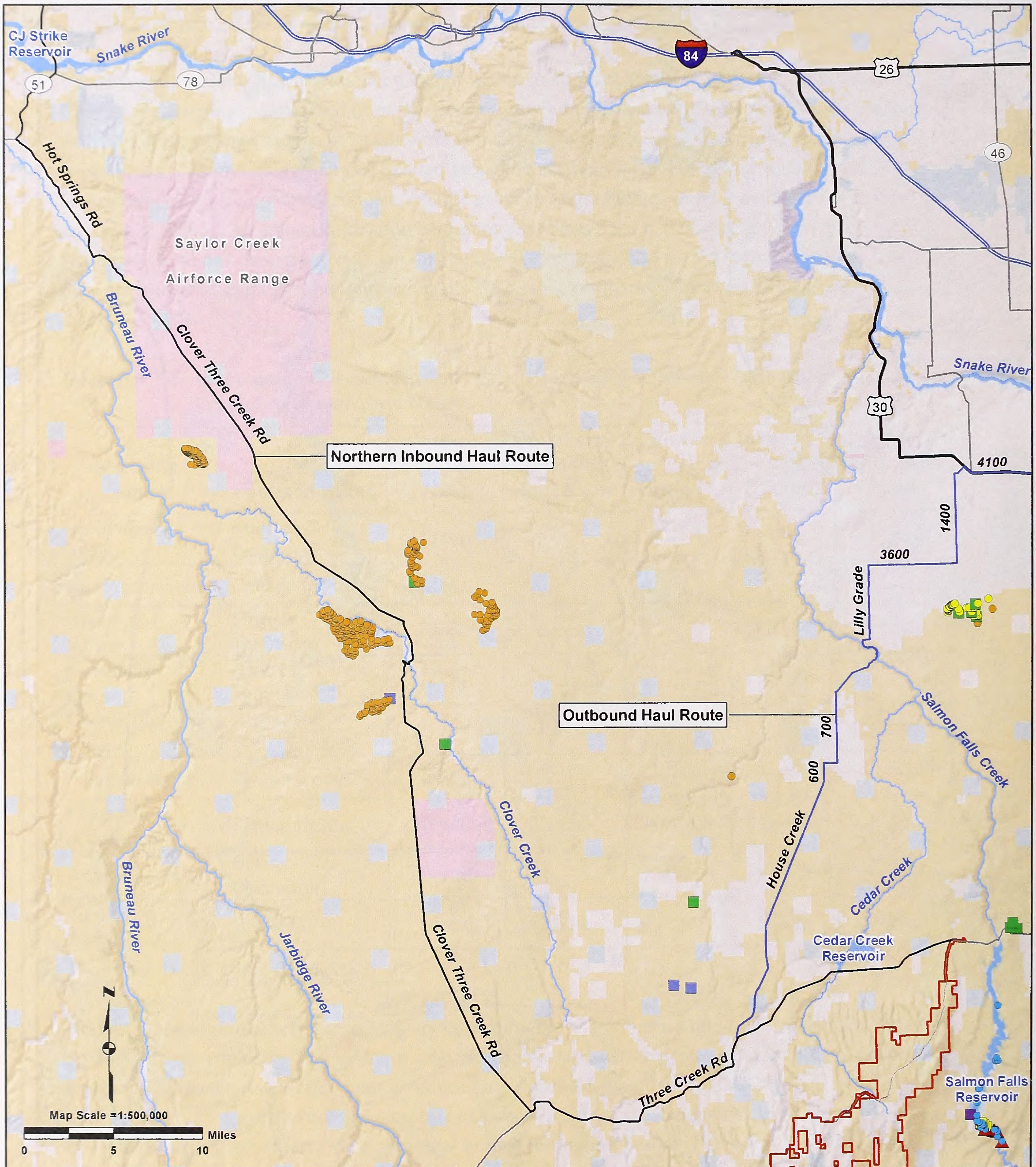
No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM. No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.



LEGEND

Project Area Boundary

Noxious Weed Locations

Canada thistle | Rush skeletonweed | Scotch thistle
Diffuse knapweed | Russian knapweed | Spotted knapweed
Dyer's woad | Saltcedar

Land Status (Ownership)

BLM | Private | State | Military

Figure 3.2.1-2b. Noxious Weed Locations: Northern Inbound & Outbound Haul Routes

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Most noxious weeds and invasive plants are prolific seed producers that are easily dispersed, are widely adapted to a range of habitats, and compete with native species (National Invasive Species Information Center, 2010; Pellant, 1996; Wilson & Randall, 2003; National Park Service, 2010; Driesche, Blossey, Hoodle, Lyon, & Reardon, 2002; Washington State Weed Board, 2010; Kiemnec & McInnis, 2009; Young & Clements, 2005). Cheatgrass, in particular, has the ability to adapt and survive in new environments (Pellant, 1996; Brown & Rowe, no date) and can invade communities, no matter their seral status (Young & Clements, 2005). It typically germinates in the fall, but can also germinate at other times of the year. Due to its short growth period, it dries out sooner, relative to native plants, and increases wildfire danger (Pellant, 1996). It has been reported from 1,500 to 9,000 feet in elevation, but proliferates in the more xeric lower elevations of Wyoming big sagebrush (Zouhar, 2003) and more mesic salt desert shrub plant communities (Peters & Bunting, 1994; Pellant, 1996). The higher elevations in the project area have a shorter growing season and are dominated by mountain big sagebrush. These communities can host cheatgrass, but it typically does not dominate.

3.2.1.3 Special Status Plants

Special status plants include all vascular plants, non-vascular plants, and lichens that are federally listed as threatened or endangered under the Endangered Species Act (ESA), species proposed for listing as threatened or endangered, candidate species, and BLM sensitive species. The BLM manages special status species under the policy established in BLM Manual 6840 in addition to requirements set forth under the ESA.

National policy directs BLM State Directors to designate sensitive species in cooperation with the state fish and wildlife agency. The Idaho and Nevada BLM state offices updated their sensitive plant species designations in 2010 and 2003, respectively. The sensitive species designation is normally used for species that occur on public lands and for which BLM has the capability to affect the conservation status of the species through management. BLM policy requires that "actions authorized by the BLM shall further the conservation and/or recovery of federally listed species and conservation of Bureau sensitive species" and that "Bureau sensitive species will be managed consistent with species habitat management objectives in land use and implementation plans to promote their conservation and to minimize the likelihood and need for listing under the ESA" (BLM Manual 6840.06).

Slickspot peppergrass is a threatened plant species under the Endangered Species Act of 1973 (ruling effective December 7, 2009; United States Fish and Wildlife Service [USFWS], 2009). It is known to occur adjacent to portions of the northern inbound haul route (Idaho Fish and Wildlife Information System [IFWIS], 2010). Full special status plant surveys have not been conducted within the project area or along the haul routes. For analysis purposes, slickspot peppergrass habitat is presented in three categories: occupied slickspot peppergrass habitat, potential slickspot peppergrass habitat, and slickspot peppergrass habitat. Occupied slickspot peppergrass habitat is defined as "areas where slickspot peppergrass populations occur; occupied habitat includes a 0.5-mile habitat integrity zone buffering populations" (BLM, 2010c; IFWIS, 2010). Potential slickspot peppergrass habitat is defined as "areas within the known range of slickspot peppergrass with general soil and elevation

characteristics that indicate the potential for the area to support the species, although the presence of slickspots or slickspot peppergrass plants is unknown" (BLM, 2010c; BLM, 2003). Slickspot peppergrass habitat is defined as "areas that meet the criteria for potential habitat and contain slickspots" (BLM, 2010c; BLM, 2003; WEST, 2010). An additional 0.5-mile buffer was placed around each of the three categories of slickspot peppergrass habitat in the analysis area per *BLM Slickspot Peppergrass Inventory and Clearance Standards* (BLM, 2010c).

There are 5,700 acres of occupied slickspot peppergrass habitat (IFWIS, 2010) within 0.5 miles of the northern inbound haul route. There are approximately 33,048 acres of potential slickspot peppergrass habitat within a 0.5-mile buffer of the northern inbound haul route and 1,525 acres within 0.5 miles of the project area, along Monument Springs Road. There is no potential slickspot peppergrass habitat along either option of the southern inbound haul route; therefore it is assumed unoccupied. Slickspot peppergrass surveys performed along the outbound haul route within potential slickspot peppergrass habitat (BLM, 2003) indicate presence of slickspot peppergrass habitat (slickspots); however, no slickspot peppergrass plants were observed (WEST, 2010). As a result, mapped potential habitat (BLM, 2003) along the outbound haul route is considered slickspot peppergrass habitat, per *BLM Slickspot Peppergrass Inventory and Clearance Standards* (BLM, 2010c). There are 12,802 acres of slickspot peppergrass habitat within 0.5 miles of the outbound haul route.

In addition to slickspot peppergrass, six plant species considered sensitive by the BLM have the potential to occur within the project area or along either option of the southern inbound haul route (Table 3.2.1-6) based on proximity of known occurrences and available habitat (IFWIS, 2010; BLM, no date; BLM, 2006; BLM, 2000; Flora of North America, 1993+; Hickman, 1993; NatureServe, 2010; Nevada Natural Heritage Program, 2008). Four plant species considered sensitive by the BLM, other than slickspot peppergrass, are known to occur within 0.5 miles of the northern inbound haul route (Table 3.2.1-6; IFWIS, 2010; BLM, no date). Table 3.2.1-6 summarizes all special status plants that occur or have the potential to occur within the project area and haul routes. The table includes the BLM status for Idaho and Nevada, the general habitat, and known global and statewide distribution.

Table 3.2.1-6. Special Status Plants Species Known to Occur, or with the Potential to Occur, within the Project Area and Haul Routes.

Scientific Name	Common Name	BLM Status (ID[1] & NV[2])	General Habitat and Potential Occurrence[3]	Global and Statewide known Distribution[4]
Allium anceps	Two-headed onion	ID: Type 3 NV: No rank	Heavy soils of volcanic origin in or around seasonally wet playas, swales, and other low places, or thin, rocky soil in the low sagebrush zone. Sites are usually flat to gently sloping, and sparsely vegetated at 4,920-5,250 feet. Potential habitat within the project area and both options of the southern inbound haul route.	Globally known from Jerome and Twin Falls counties in Idaho where it is considered imperiled. It is also known to occur in Nevada, northeast California, and southeast Oregon, where it has no conservation status.
Astragalus newberryi var. *castoreus*	Newberry's milkvetch	ID: Type 4 NV: No rank	Foothills, bluffs, and badlands within sagebrush and piñon - juniper communities of the Great Basin at 4,100-7,875 feet. Occupied and potential habitat within the project area. Potential habitat within both options of the southern inbound haul route.	Globally known from Twin Falls and Owyhee counties in Idaho where it is considered imperiled. It is also known to occur in Nevada, Utah, California, and Oregon, where conservation status has not been assessed.
Astragalus tetrapterus	Four-wing milkvetch	ID: Type 3 NV: No rank	Gullied bluffs, barren knolls, stabilized dunes, and open valley floors mostly in loose sandy or tuffaceous soils, in sagebrush climax or piñon -juniper woodlands at 5,500-6,500 feet. Potential habitat within the project area and both options of the southern inbound haul route.	Globally known from Twin Falls and Owyhee counties in Idaho where it is considered critically imperiled. It is also known to occur in Utah where it is vulnerable, Oregon where it is secure, and Nevada and Arizona where its conservation status has not been assessed.
Cymopterus acaulis var. *greeleyorum*	Greeley's wavewing	ID: Type 3 NV: No rank	Known to occur on sandy loam or clay soils or brown and white volcanic ash within Wyoming big sagebrush, desert shrub, and Indian ricegrass at sites which undergo a lot of soil movement; the sand is loosely held together, while the deposits that have weathered clay shrink and swell greatly. Occupied habitat within 0.5 miles of the northern inbound haul route. Potential habitat within the northern inbound haul route.	Globally known from Twin Falls, Elmore, and Owyhee counties in Idaho where it is considered imperiled. It is also known to occur in Malheur County, Oregon where it is considered critically imperiled.

Table 3.2.1-6. Special Status Plants Species Known to Occur, or with the Potential to Occur, within the Project Area and Haul Routes (continued).

Scientific Name	Common Name	BLM Status (ID[1] & NV[2])	General Habitat[3]	Global and Statewide known Distribution[4]
Dimeresia howellii	Dimeresia	ID: Type 3 NV: No rank	Occurs in high desert foothills and drier parts of the mountains on dry rocky, cinder or gravelly soils from 3,600-9,514 feet. Occupied and potential habitat within the project area. Potential habitat within both options of the southern inbound haul route.	Globally known from northeast California where it is considered imperiled, and Owyhee and Twin Falls counties in Idaho, where it is also considered imperiled. It is more common in the center of its range in Nevada, where it is apparently secure, and southeast Oregon, where its conservation status has not been assessed.
Eriogonum shockleyi var. packardiae	Packard's buckwheat	ID: Type 2 NV: No rank	Oolitic limestone outcrops, sandy loess over basalt, and cobbly desert pavement over deep sandy-loam; in shadscale, mixed desert shrub and sagebrush communities from 2,500-4,200 feet. Occupied habitat within 0.5 miles of the northern inbound haul route. Potential habitat within the northern inbound haul route.	Globally known from Ada and Owyhee counties in Idaho where it is considered imperiled.
Ipomopsis polycladon	Spreading gilia	ID: Type 3 NV: No rank	Occurs in dry, open areas on sandy silty soils; desert shrub communities of shadescale, horsebrush, and sagebrush from 2,625-4,920 feet. Occupied habitat within 0.5 miles of the northern inbound haul route. Potential habitat within the northern inbound haul route.	Globally known from Ada, Butte, Elmore, Owyhee, and Power counties in Idaho where it is considered imperiled. It is also known in Nevada, Oregon, California, Utah, Arizona, Colorado, and New Mexico where it is not ranked, and Wyoming and Texas where it is considered critically imperiled.
Lepidium davisii	Davis' peppergrass	ID: Type 3 NV: N	Mostly barren, hard bottom playas surrounded by Wyoming big sagebrush, four-wing saltbush, and Sandberg bluegrass, though occasionally with silver sagebrush or shadscale at 2,625-5,250 feet. Occupied habitat within 0.5 miles of the northern inbound haul route. Potential habitat within the northern inbound haul route, project area, and both options of the southern inbound haul route.	Globally known from Ada, Owyhee, Twin Falls, and Elmore counties in Idaho where it is considered vulnerable. It is also known to occur in Elko County in Nevada and Malheur County in Oregon where it is considered critically imperiled.

Table 3.2.1-6. Special Status Plants Species Known to Occur, or with the Potential to Occur, within the Project Area and Haul Routes (continued).

Scientific Name	Common Name	BLM Status (ID[1] & NV[2])	General Habitat[3]	Global and Statewide known Distribution[4]
Lepidium papilliferum	Slickspot peppergrass	ID: Type 1, Threatened NV: No rank	Found in slickspots within sagebrush-steppe habitats at 1,300-5,250 feet. Occupied and potential habitat within 0.5 miles of the northern inbound haul route, potential habitat within the project area, and slickspot peppergrass habitat adjacent to the outbound haul route.	Globally known only from southwestern Idaho in Ada, Boise, Canyon, Elmore, Gem, and Owyhee counties.
Townsendia scapigera	Tufted Townsend daisy	ID: Type 3 NV: No rank	Openings in sagebrush on rocky slopes at 4,600-11,500 feet. Potential habitat within the project area and both options of the southern inbound haul route.	Globally known from Twin Falls County in Idaho and Millard County in Utah, where it is considered critically imperiled. It is also known to occur in Oregon where it is apparently secure, and California and Nevada where its conservation status has not been assessed.

[1] Idaho BLM Sensitive Species are listed as Type 1 through Type 4 (BLM, 2010c). Type 1 = ESA Listed, Proposed and Candidate Species; Type 2 = Rangewide / Globally Imperiled Species - High Endangerment; Type 3 = Rangewide or Statewide Imperiled Species - Moderate Endangerment; Type 4 = Species of Concern: Includes species that are generally rare in Idaho with currently low endangerment threats.
[2] Nevada BLM Special Status Species designated Sensitive by State Office = N (Nevada Natural Heritage Program, 2004; Nevada Natural Heritage Program, 2009).
[3] **Sources:** BLM, 2006; BLM, 2000; Flora of North America, 1993+; Hickman, 1993.
[4] **Sources:** NatureServe, 2010; Idaho Department of Fish and Game, 2009; URS, 2010a; and URS, 2010b.

Newberry's milkvetch and dimeresia have both been identified within the project area. Newberry's milkvetch could be relatively common and widespread within the project area and both options of the southern inbound haul route. It was incidentally observed during site visits in 2009 and 2010 by URS and WEST, Inc. biologists and it was common in areas where it was observed (URS, 2010a). Dimeresia was also observed incidentally in a localized area of the project area in 2010 (URS, 2010b). There are approximately 8 acres of occupied Newberry's milkvetch habitat known within the project area and less than 1 acre of occupied dimeresia habitat (URS, 2010a; URS, 2010b). Tufted Townsend daisy is more likely to occur in relatively small, localized areas due to its more specialized habitat (BLM, 2000; Flora of North America Editorial Committee, 1993+). Two-headed onion, four-wing milkvetch, and Davis' peppergrass have potential habitat within the analysis area; however, the likelihood of occurrence is relatively low due to their more specialized habitat (BLM, 2006).

Potential habitat for special status plants other than slickspot peppergrass was modeled within the project area and along the inbound haul routes based on known elevation, vegetation group, and slope (BLM, 2006; BLM, 2000; Flora of North America, 1993+; Hickman, 1993). The acres of modeled

potential habitat for special status plants are presented in the following tables for the project area (Table 3.2.1-7), northern inbound haul route (Table 3.2.1-8), option 1 of the southern inbound haul route (Table 3.2.1-9), and option 2 of the southern inbound haul route (Table 3.2.1-10).

Table 3.2.1-7. Acres of Potential Special Status Plant Habitat in the Project Area.

Scientific Name	Common Name	BLM	Private	State	Total
Allium anceps	Two-headed onion	135	0	0	135
Astragalus newberryi var. *castoreus*	Newberry's milkvetch	6,258	3,065	904	10,227
Astragalus tetrapterus	Four-wing milkvetch	1,972	13	1	1,986
Dimeresia howellii	Dimeresia	11,501	5,224	1,412	18,137
Lepidium davisii	Davis' peppergrass	123	0	0	123
Townsendia scapigera	Tufted Townsend daisy	11,501	5,224	1,412	18,137

Table 3.2.1-8. Acres of Potential Special Status Plant Habitat in the Northern Inbound Haul Route.

Scientific Name	Common Name	BLM	Military	Private	State	Total
Cymopterus acaulis var. *greeleyorum*	Greeley's wavewing	20	0	81	0	101
Eriogonum shockleyi var. *packardiae*	Packard's cowpie buckwheat	20	0	80	0	101
Ipomopsis polycladon	Spreading gilia	<1	0	<1	0	<1
Lepidium davisii	Davis' peppergrass	1,488	699	46	93	2,326

Table 3.2.1-9. Acres of Potential Special Status Plant Habitat in the Southern Inbound Haul Route Option 1.

Scientific Name	Common Name	BLM	Private	State	Total
Allium anceps	Two-headed onion	29	0	0	29
Astragalus newberryi var. *castoreus*	Newberry's milkvetch	289	8	0	297
Astragalus tetrapterus	Four-wing milkvetch	243	34	0	277
Dimeresia howellii	Dimeresia	428	34	0	462
Lepidium davisii	Davis' peppergrass	29	0	0	29
Townsendia scapigera	Tufted Townsend daisy	451	34	0	485

Table 3.2.1-10. Acres of Potential Special Status Plant Habitat in the Southern Inbound Haul Route Option 2.

Scientific Name	Common Name	BLM	Private	State	Total
Allium anceps	Two-headed onion	29	0	0	29
Astragalus newberryi var. *castoreus*	Newberry's milkvetch	524	24	0	548
Astragalus tetrapterus	Four-wing milkvetch	357	25	0	382
Dimeresia howellii	Dimeresia	569	25	0	594
Lepidium davisii	Davis' peppergrass	27	0	0	27
Townsendia scapigera	Tufted Townsend daisy	569	25	0	594

3.2.2 FISH AND WILDLIFE

This section summarizes fish and wildlife resources potentially impacted by the project. The sources of information used to describe the habitat and presence of fish and wildlife species include published literature, unpublished IDFG and NDOW data on big game and game birds, BLM technical bulletins from the Jarbidge and Wells Field Offices, BLM Wildlife Database, IDFG Conservation Data Center Database, interviews with biologists familiar with the area, and data from baseline wildlife field studies. Baseline wildlife studies began in the spring of 2008, and included fixed-point bird use seasonal surveys, breeding bird surveys, raptor nest and migration surveys, nocturnal radar surveys for migrating birds, acoustic surveys for bats, mist-netting and telemetry surveys for bats, and documentation of incidental wildlife observations, including big game. Sage-grouse (*Centrocerus urophasianus*) telemetry data from past and on-going research studies by IDFG, the University of Idaho, and WEST, Inc. were also utilized. The detailed methods and results of the field studies are provided in the project file, and the results are summarized for the applicable species or species groups in this section.

3.2.2.1 Introduction

The portions of the Jarbidge Field Office and Wells Field Office identified for the project are home to numerous fish and wildlife species. A brief description of mammals, reptiles, amphibians, and fish in the project area and vicinity follows. Many of these are not analyzed specifically in this Environmental Impact Statement, but are considered a resource that would be impacted in a manner similar to one or more species discussed within this document. Migratory birds, special status animals, and big game, which were raised as significant issues during public scoping (Section 1.6.1), are addressed in more detail in Sections 3.2.2.2, 3.2.2.3, and 3.2.2.4, respectively.

The project area and immediate vicinity was inventoried for birds beginning in 2008. Sixty-six avian species were observed, including passerines, raptors, waterbirds, shorebirds, upland gamebirds, and woodpeckers. The dominant birds recorded were passerines. Results of these surveys are documented in Young et al. (2009) and summarized in Section 3.2.2.2 and Appendix 3C.

Mammals such as bats, coyotes (*Canis latrans*), badgers (*Taxidea taxus*), skunks, foxes (*Vulpes* sp.), and mountain lions (*Felis concolor*) occur in the China Mountain area. BLM has identified 21 species of small mammals in the Jarbidge Field Office through field surveys (BLM, 2007a), of which 16 could be found in appropriate habitats within the project area. These include the sagebrush vole (*Lemmiscus curtatus*), mountain vole (*Microtus Montane*), Great Basin pocket mouse (*Perognathus parvus*), deer mouse (*Peromyscus maniculatus*), mountain cottontail (*Sylvilagus nuttallii*), jackrabbits (*Lepus* sp.), and marmots (*Marmota* sp.), among others. No specific field surveys were conducted for these species.

Recent inventories of the Jarbidge Field Office identified ten reptile species. These included the gopher snake (*Pituophis catenifer*), racer (*Coluber constrictor*), western rattlesnake (*Crotalus viridis*), striped whipsnake (*Masticophis taeniatus*), western terrestrial gartersnake (*Thamnophis elegans*), short-horned lizard (*Phrynosoma douglassii*), western whiptail (*Cnemidophorus tigris*), longnose leopard lizard (*Gambelia wislizenii*), sagebrush lizard (*Sceloporus graciosus*), and side-blotched lizard (*Uta stansburiana*) (BLM, 2007a). All of these species, with the exception of western whiptails and longnose leopard lizards potentially occur in the project area. Other reptiles potentially occurring in the project area include the Great Basin collared lizard (*Crotaphytus bicinctores*), western fence lizard (*Sceloporus occidentalis*), rubber boa (*Charina bottae*), and western skink (*Eumeces skiltonianus*).

Amphibians are likely found associated with the intermittent and perennial streams and flowing springs and seeps in the project area (Figure 3.1.4-1; Figure 3.1.4-4). In 2007, five species of amphibians were located during BLM surveys of the Jarbidge Field Office (BLM, 2007a). These include the Great Basin spadefoot toad (*Scaphiopus intermontanus*), western toad (*Bufo boreas*), Pacific chorus frog (*Pseudacris regilla*), bullfrog (*Rana catesbeiana*), and Columbia spotted frog (*Rana luteiventris*). The spadefoot toad, bullfrog, and western toad are not likely to occur within or near the project area (Idaho Vertebrate Modeling Database [IDVMD], 2009). Columbia spotted frog and northern leopard frog (*Rana pipiens*), are addressed in Section 3.2.2.3.

Several species of game and nongame fishes occur in the reservoirs and streams potentially impacted by the project. Non-sensitive species include the following game species: brook trout (*Salvelinus fontinalis*), rainbow trout (*Oncorhynchus mykiss*), and Kokanee salmon (*Oncorhynchus nerka*) (BLM, 2007b). Game fish populations are managed by IDFG and NDOW through angler harvest regulations and fish stocking programs. Non-game fish are native fish not actively managed by IDFG and NDOW angler harvest regulations and include dace, shiner, sucker, and sculpin species (BLM, 2007b). Sculpin species could include the mottled (*Cottus bairdi*), Paiute (*Cottus beldingii*), and shorthead sculpin (*Cottus confusus*). Sucker species could include the large-scale (*Catostomus macrocheilus*), mountain (*Catostomus platyrhynchus*), and bridgelip (*Catostomus columbianus*) sucker. Shiner and dace species could include the redside shiner (*Richardsonius balteatus*), speckled dace (*Rhinichthys osculus*), longnose dace (*Rhinichthys cataractae*), and leopard dace (*Rhinichthys falcatus*). Non-game fish are recognized by Federal and state agencies as an important food source for other fish and wildlife species and help maintain a healthy aquatic system (BLM, 2007b). Fish species

observed in tributaries to the Salmon Falls Creek Watershed that originate from the project area and along the haul routes are presented in Table 3.2.2-1 (BLM, 2007b).

Table 3.2.2-1. Fish Species in Tributaries Originating from the Project Area and along the Haul Routes.

Stream	Fish Species							
	Brook Trout	Redband Trout	Rainbow Trout	Kokanee	Dace sp.	Shiner sp.	Sucker sp.	Sculpin sp.
Bear Creek[1]		X						
Cedar Creek	X	X	X		X	X	X	X
China Creek		X	X	X			X	X
N. Fk. Salmon Falls Creek		X			X		X	
Rocky Canyon Creek[1]		X			X	X		
Shack Creek[1]		X						
House Creek		X	X		X	X	X	
Cottonwood Creek		X			X	X	X	
Clover Creek		X			X	X	X	X
Salmon Falls Creek	X	X	X		X	X	X	X

[1] Tributaries to North Fork Salmon Falls Creek

3.2.2.2 Migratory Birds

This section addresses migratory bird species in the project area and along the haul routes that could be affected by the project. Migratory birds are protected under the Migratory Bird Treaty Act. Executive Order 13186 outlines the responsibilities of Federal agencies to protect migratory birds. The BLM Washington Office Instruction Memorandum 2008-050 provides interim guidance for Federal responsibilities under the Migratory Bird Treaty Act. The Bald and Golden Eagle Protection Act (16 United States Code 668 *et seq.*) describes criminal and civil sanctions for unlawful possession or taking of both bald (*Haliaeetus leucocephalus*) and golden (*Aquila chrysaetos*) eagles. The BLM Washington Office Instruction Memorandum 2010-156 provides direction for complying with the act and how to address golden eagles within NEPA documents. Instruction Memorandum 2010-156 targets the immediate needs associated with renewable energy development on public lands. BLM must consider both migratory birds and bald and golden eagles in every NEPA analysis of actions that have a potential to negatively or positively affect the species of concern.

Instruction Memorandum 2008-050 refers to the Birds of Conservation Concern (USFWS, 2008) and Game Birds Below Desired Condition (USFWS, 2010a) for a list of species likely to occur in the region and requiring project level NEPA analysis. Review of this list indicates 14 birds in Bird Conservation Region 9 of the Birds of Conservation Concern and 1 bird on the Game Birds Below Desired Condition list that potentially occupy habitats within the project area and haul routes or were identified during wildlife surveys. These species include the greater sage-grouse (*Centrocercus urophasianus*), bald eagle, golden eagle, ferruginous hawk (*Buteo regalis*), peregrine falcon (*Falco peregrinus anatum*), Brewer's sparrow (*Spizella breweri*), loggerhead shrike (*Lanius ludovicianus*),

sage sparrow (*Amphispiza belli*), Virginia's warbler (*Oreothlypis virginiae*), calliope hummingbird (*Stellula calliope*), sage thrasher (*Oreoscoptes montanus*), green-tailed towhee (*Pipilo chlorurus*), burrowing owl (*Athene cunicularia*), long-billed curlew (*Numenius americanus*), and mourning dove (*Zenaida macroura*). All but three of these species are described in Section 3.2.2.3, Special Status Animals. The sage thrasher, green-tailed towhee, and mourning dove are described below under Passerines and Other Birds.

Several additional species of migratory birds potentially utilize habitat in the project area or use the area as a migration route between winter and summer roost sites. These are presented in Appendix 3C but are not described in detail in this chapter. It can be assumed that potential impacts to bird species not on the Birds of Conservation Concern list or Game Birds Below Desired Conditions list would be similar to those on the lists that are analyzed in detail in Chapter 4. The following text provides a brief summary of surveys that have been completed in the project area for migratory birds, including raptors and passerines.

Raptors

Annual mean raptor use is a statistical measure that can compare raptor use between study sites and provide insight into the magnitude of potential impacts a project may have on raptors. While several factors likely influence raptor mortality rates at wind energy facilities, the level of raptor use may be one factor in estimating raptor mortality (Young, Hallingstad, Poulton, & Bay, 2009). Raptors were identified within the project area through multiple survey methods including migration surveys, year-round surveys, and nesting surveys. Annual mean raptor use was calculated from surveys performed within the project area and does not estimate use along the haul routes. The annual mean raptor use at China Mountain ranks in the middle among 36 other wind energy facilities with similar data (Young et al., 2009).

Migration Surveys

Raptor migration surveys were conducted within and to the east of the project area in the spring and fall of 2008 to estimate abundance of migrating raptors. Survey locations were positioned on Browns Bench during the spring and within the project area during the fall. A total of 12 raptor species were observed during the spring survey and a total of 11 raptor species were observed during the fall survey. Three of these species, the ferruginous hawk, peregrine falcon, and golden eagle, occur on the list of the Birds of Conservation Concern. Mean use was higher in the spring compared to the fall. A total of 192 individual raptor observations within 164 separate groups were recorded during the spring migration surveys and a total of 116 individual raptor observations within 108 separate groups were recorded in the fall. A total of 14 different raptor species were observed during both seasons including: Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*), ferruginous hawk, red-tailed hawk (*Buteo jamaicensis*), rough-legged hawk (*Buteo lagopus*), Swainson's hawk (*Buteo swainsoni*), golden eagle, American kestrel (*Falco sparverius*), merlin (*Falco columbarius*), prairie falcon (*Falco mexicanus*), peregrine falcon, northern harrier (*Circus cyaneus*), osprey (*Pandion haliaetus*), and turkey vulture (*Cathartes aura*) (Appendix 3C, Table 3; Young et al., 2009). Eight of these species were present during both the spring and fall seasons.

American kestrel, red-tailed hawk, and northern harriers were the most common species during the spring surveys and golden eagles, sharp-shinned hawks, and northern harriers were the most common species during the fall surveys (Appendix 3C, Table 3 and Table 4). All other raptor species comprised less than 5 percent of the observations in the spring and less than 10 percent of observations in the fall. Turkey vulture migration was higher during the spring season than in the fall. Vultures comprised 21 percent of the overall migrant use in the spring but only 2 percent in fall. Presence of ferruginous hawks, merlin, peregrine falcon, and osprey were uncommon, with three or less individuals observed (Young et al., 2009).

Seasonal movement patterns for raptors were variable during the spring. Raptor movement showed a peak in early April, with April 8 having the highest count of the season. The largest fall movement occurred in late September with the highest count occurring on September 29, but high numbers were also observed throughout October. For vultures, movement occurred throughout the spring season with pulses in late April and again in late May. Vulture movement was relatively absent during the fall season.

An IDFG study of fall raptor movements documented a Cooper's hawk roosting within the Monument Canyon drainage and at Salmon Falls Creek Reservoir. Radio-telemetry data on the Cooper's hawk suggests a northwest-southeast migration route exists through a portion of the project area (Haak & Oelrich, 2008). While raptors use portions of the project area during seasonal movements, data collected during raptor migration surveys do not suggest that China Mountain serves as a major raptor migration corridor (Young et al., 2009).

Year-round Surveys

The majority of the raptor species observed during the raptor migration surveys were also observed during ground-based fixed-point bird surveys and breeding bird surveys. One additional species, the northern goshawk (*Accipiter gentilis*), was observed once during the fall. American kestrels were observed frequently during the spring, summer, and fall counts, in contrast to the migration surveys. Species commonly observed during the summer included red-tailed hawk, golden eagle, northern harrier, and turkey vulture (Appendix 3C, Table 1 and Table 2; Young et al., 2009). Several of the raptor species are BLM sensitive and are addressed further in Section 3.2.2.3.

Flight height characteristics were estimated for raptors from fixed-point survey locations. Flight height varied by raptor group. Mean flight height recorded during fixed point surveys for all raptor species combined, except vultures, was 40.5 feet above the ground. Approximately 66 percent flew between 0 and 114 feet above ground, 27 percent flew between 114 and 427 feet above ground, and 7 percent flew at heights greater than 427 feet. Mean flight height recorded during spring and fall raptor surveys for all raptor species was 105.2 feet and 125.5 feet above the ground, respectively. Further details are presented in Appendix 3D, Tables 1 through 3.

Nesting Surveys

Aerial raptor nest surveys were conducted within the ROW preference area and a 2-mile buffer of the ROW preference area and previously proposed transmission line corridor in the spring of 2008 (Young et al., 2009). Additional raptor nest surveys were performed within a 2-mile buffer of the southern haul route option and transmission line corridor in 2010 (LeBeau & Young, 2010). Occupied nests of four species were recorded. Additionally, several inactive raptor nests were observed. To aid in the analysis of impacts presented in Chapter 4, the number of raptor nests within 1 mile of the project area and haul routes is presented. Within 1 mile of the project area, there are 11 red-tailed hawk nests, two golden eagle nests, one prairie falcon nest, and 54 inactive nests (Young et al., 2009). Surveys were not performed along the northern inbound and outbound haul routes, but multiple raptor species are known to nest within 1 mile of both routes (IFWIS, 2010), including Swainson's and ferruginous hawks, with ferruginous hawks the most dominant. There are no known raptor nests within 1 mile of the southern inbound haul route option 1; however, one golden eagle and prairie falcon nest is within 1.2 and 1.3 miles of this route, respectively. One golden eagle nest occurs within 1 mile of the southern inbound haul route option 2.

Passerines and Other Birds

Fifty-one species of passerines and other types of birds were identified during fixed-point and breeding bird surveys (Appendix 3C, Table 1 and Table 2). Two passerines found on the Birds of Conservation Concern list are not considered sensitive by the BLM: the sage thrasher and green-tailed towhee. Both species utilize sagebrush communities and were moderately abundant within the project area during breeding bird surveys. The mourning dove appears on the Game Birds Below Desired Condition list and was identified during summer and fall surveys (14 individuals observed). It is a member of the Columbidae family of doves and pigeons, and is considered a habitat generalist and highly adaptable, occurring in most ecological types other than marshes and heavily forested areas (NRCS, 2005).

The most abundant passerine species (>50 individuals recorded) observed during the spring (April 1 to June 15, 2008) were Brewer's sparrow, vesper sparrow, and horned lark, all sagebrush associated species. Cliff swallows, which are associated with rocky canyons and cliffs such as those present on the eastern portion of the project area, and violet-green swallows, which are associated with high elevation woodlands and watercourses, were also abundant during the spring. All of these species were also abundant in the summer (June 16 to August 15, 2008). Other abundant species observed during the summer were common raven (*Corvus corax*), which is associated with hilly mountainous areas near cliffs but could utilize most habitats, fox sparrow (*Passerella iliaca*) and spotted towhee (*Pipilo maculatus*), which use woodlands, thickets, and or riparian areas, rock wren (*Salpinctes obsoletus*) which use shrubby areas in rocky canyons and cliffs, and mountain bluebird (*Sialia currucoides*), which is associated with high elevation open meadows and woodlands.

Numerous bluebird nesting boxes have been placed in the project area and vicinity, which enhances the habitat for mountain bluebirds. The most abundant birds identified during the fall (August 16 to October 31, 2008) were the Brewers' sparrow, horned lark (*Eremophila alpestris*), mountain bluebird,

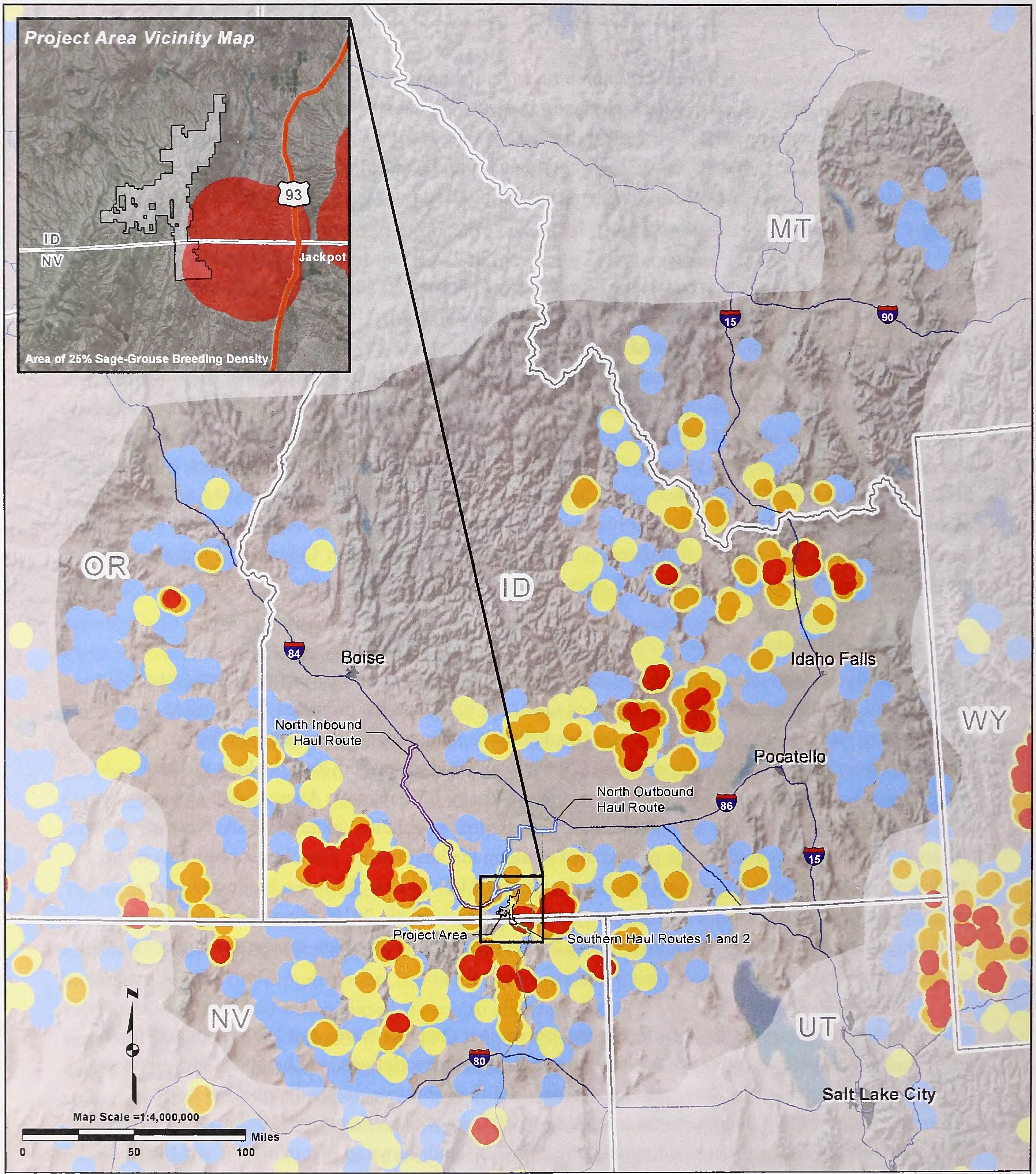
American robin (*Turdus migratorius*), common raven, and chipping sparrow (*Spizella passerina*), a species associated with open woodlands and riparian areas. The most abundant birds identified during the winter (November 1 to March 31, 2008) were horned lark and gray-crowned rosy finch (*Leucosticte tephrocotis*), the latter, which can be found in rocky and cliffy areas and brushy areas. BLM sensitive passerines and other birds identified during the surveys are addressed further in Section 3.2.2.3.

Flight height characteristics were estimated for passerines, doves, and other birds from fixed-point survey locations (Appendix 3D, Table 1). Mean flight height recorded for all passerine species was approximately 18 feet above the ground. Approximately 74 percent flew between 0 and 114 feet above ground, 25 percent flew between 114 and 427 feet above ground, and less than 1 percent flew at heights greater than 427 feet. Mean flight height recorded for all dove/pigeon species was approximately 35 feet above the ground. Approximately 34 percent flew between 0 and 114 feet above ground, 57 percent flew between 114 and 427 feet above ground, and less than 9 percent flew at heights greater than 427 feet. Mean flight height recorded for other birds (not including water birds, raptors, and upland game birds) was approximately 17 feet above the ground. Approximately 93 percent flew between 0 and 114 feet above ground, 7 percent flew between 114 and 427 feet above ground, and less than 1 per cent flew at heights greater than 427 feet (Young et al., 2009).

3.2.2.3 Special Status Animals

Special status animals include all fish and wildlife, including aquatic and terrestrial invertebrates, that are federally listed as threatened or endangered under the ESA, species proposed for listing as threatened or endangered (candidate species), and BLM sensitive species. No federally listed threatened or endangered animal species are known to occur in the project area or along the haul routes. Gray wolves (*Canis lupus*) were relisted in the Rocky Mountains in August 2010 and are classified in southern Idaho as an experimental, nonessential population under the ESA. No wolf observations have been made in the project area or along the haul routes. The closest observations in 2009 were made by the public of an individual wolf off of US-93 near Hollister, Idaho and of multiple wolves off of Interstate 84 near Jerome, Idaho (Mack, et al., 2010). Two candidate species for listing under the ESA that are known to use the project area: greater sage-grouse and Columbia spotted frog.

Special status animals with the potential to occur in or near the project area and haul routes are listed in Appendix 3E along with their BLM status, general habitat descriptions, and habitat associations. Potential for occurrence was determined based on wildlife inventories, range distribution maps, resource specialist input, literature research, and associations with habitat type. Habitat associations are tied to the vegetation groups addressed in Section 3.2.1 and shown in Figure 3.2.1-1 and the riparian areas addressed in Section 3.1.4. The full lists of special status species for Idaho and Nevada BLM are included in the project file. The following sections describe additional information on the habitat, presence, and population trends (when known) of special status species or groups of species. The greater sage-grouse, sharp-tailed grouse (*Tympanuchus phasianellus columbianus*), and redband trout (*Oncorhynchus mykiss gibbsi*) are called out specifically; as these species were brought up as an



LEGEND

Sage-grouse Management Zone IV Boundary

Sage-grouse Breeding Density (Doherty et al. 2010)

- 25%
- 50%
- 75%
- 100%

Figure 3.2.2-1. Sage-grouse Range-wide Breeding Densities

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issue by the public (Section 1.6.1). The remaining special status species are discussed as species groups: raptors, passerines and other birds, bats, small mammals, reptiles, and amphibians. The pygmy rabbit, which was also brought up as an issue by the public, is addressed within the section on small mammals.

Greater Sage-grouse

The Greater sage-grouse (sage-grouse) is a candidate for Federal listing, having been found "warranted but precluded" for listing in the 2010 decision (USFWS, 2010b). This means that the species warrants the protection of the ESA, but that listing of the species at this time is precluded by the need to address higher priority listing activities first. As a candidate species, the sage-grouse does not receive statutory protection under the ESA.

Habitat and use for sage-grouse is described at one or more of four levels in this section to aid in the analysis of impacts presented in Chapter 4: within the project area, within a 4-mile radius of the project area, within an approximately 11-mile radius of the project area (mid-scale), and within a 34-mile radius of the project area (regional scale). The first two analysis areas were developed to address potential direct and indirect impacts to sage-grouse immediately adjacent to the project area. The 11-mile radius was selected for the mid-scale analysis as it represents the movement distance of migratory sage-grouse (Connelly, Schroeder, Sands, & Braun, 2000) and encompasses the Browns Bench and Shoshone Basin areas. This analysis area is further corroborated by Knick & Hanser (in press) who found that leks within 11.2 miles (18 Kilometer [km]) of each other had common features when compared to leks at greater distances. The mid-scale analysis area was expanded to the east beyond the 11-mile radius to encompass sage-grouse leks on Gollaher Mountain, Nevada, since birds from these leks interact with those in Shoshone Basin. The 34-mile (54-km) radius was developed to serve as a broader, regional boundary, based on the premise that landscape characteristics at a 34-mile (54-km) radius may influence sage-grouse seasonal movements and incorporate habitats used outside of the breeding season (Knick & Hanser, in press; Swenson, Simmons, & Eustace, 1987; Leonard, Reese, & Connelly, 2000). This area encompasses sage-grouse in the Jarbidge and Shoshone Basin sage-grouse working group boundaries and northern Nevada.

Population Trends

The sage-grouse is an upland game bird once abundant throughout sagebrush habitats in 12 states in the western U.S. and three Canadian provinces. Sage-grouse currently occupy parts of 11 western states (Washington, Oregon, California, Nevada, Idaho, Montana, Wyoming, Colorado, Utah, South Dakota, and North Dakota) and two Canadian provinces (Alberta and Saskatchewan), and are no longer present in Nebraska and British Columbia (Schroeder et al., 2004). The range of this species has measurably decreased within these areas since settlement of western North America in the 19th century. Sage-grouse populations are continually declining throughout their range and individual populations have become increasingly separated (Knick, Dobkin, Rotenberry, & Schroeder, 2003). Connelly, Knick, Schroeder, and Stiver (2004) estimated that sage-grouse population numbers in the late 1960s and early 1970s were likely two to three times greater than current numbers. In 2008, the Western Association of Fish and Wildlife Agencies conducted new population trend analyses that

incorporated an additional 4 years of data beyond the Connelly et al. (2004) analysis. Results of these analyses were similar to Connelly et al. (2004) in that a long-term population decline was detected from 1965 to 2007 (average 3.1% annually; Western Association of Fish and Wildlife Agencies 2008 in USFWS 2010b). Western Association of Fish and Wildlife Agencies attributed the decline to the reduction in number of active leks. While the average annual rate of decline has lessened since 1985 (3.1 to 1.4 %), population declines continue and populations are now at much lower levels than in the early 1980s, creating concern regarding long-term population persistence (USFWS, 2010b).

Sage-grouse in the project area are within the Northern Great Basin population within the Snake River Plain Sage-grouse Management Zone (Management Zone IV), as defined in Connelly et al. (2004) and Stiver et al. (2006). This population occupies portions of Nevada, southeastern Oregon, southwestern Idaho, and northwestern Utah. Garton et al. (in press) reported that population trends for the Northern Great Basin population, as indicated by average number of males per lek, declined by 37 percent from 1965-1969 to 2000-2007. Average number of males per active lek followed the same pattern over the assessment period and declined by 17 percent, and the proportion of total active leks surveyed decreased. Garton et al. (in press) also reported similar trends for Management Zone IV as a whole; population trends decreased over the assessment period by 54 percent and average number of males per active lek decreased by 39 percent.

Lek route data suggest sage-grouse populations in the Idaho Magic Valley Region, which includes the project area, declined from 2007 to 2008 after increasing from 1995 to 2006. The number of males counted on leks in 2009 was 49 percent lower than in 2006 (Idaho Department of Fish and Game [IDFG], 2010a). Further, lek route data specific to the Jarbidge Field Office collected in 2010 indicated that lek attendance was 58 percent below the 2006 level and lek data specific to Browns Bench was 59 percent below the 2006 level (IDFG, 2010b). Decreases in the sage-grouse numbers have also been recorded in Nevada (Sage-grouse Conservation Team, 2004).

Two large population strongholds for the sage-grouse are evident in the range of this species. The project area and haul routes occur within the western stronghold. This area occurs in the extensive, contiguous area encompassing southeast Oregon, northwest Nevada, southwest Idaho, northeast Nevada, and east-central Nevada and includes most areas in the northern Great Basin, southern Great Basin, and Snake River Plain (Widsom et al., in press). Data suggest that the Jarbidge foothills and Browns Bench (which include the project area) appear to provide important connectivity with sage-grouse populations in Shoshone Basin to the east, northern Nevada to the south, and Owyhee Plateau to the west (BLM, 2007b; Connelly, 2009), making sage-grouse habitat in this area vulnerable to fragmentation.

With lek data provided by the respective states within the range of sage-grouse, Doherty, Tack, Evans, and Naugle (2010) mapped breeding densities of sage-grouse as a tool for range-wide conservation planning. Maximum count data from leks between 2000 and 2009 were used to delineate high abundance population centers at the range-wide, sage-grouse management zone and state-level scales. Approximately 23 percent of the known male sage-grouse population range-wide occurs

within Management Zone IV (Connelly et al., 2004; Stiver et al., 2006). This Management Zone includes the majority of sage-grouse habitat in Idaho, as well as portions of northern Nevada, southeastern Oregon and northwestern Utah. A comparison of the analysis of Management Zone IV breeding densities by Doherty et al. (2010) with the project map suggests that the southern portion of the project area, the southern haul route options, and all of Browns Bench occur within an area containing the top 25 percent (i.e., "best of the best" leks) of the breeding population within Management Zone IV (Figure 3.2.2-1). This area represents 13 percent of the project area, 20 percent of the 4-mile analysis area, and 26 percent of the mid-scale analysis area, and underscores the relative importance of China Mountain and the surrounding area to sage-grouse. Doherty et al. (2010) states that despite high bird abundance in management zones, maintenance of the current distribution of sage-grouse would depend on effective conservation. Maintenance of desired conditions in areas identified as strongholds for sage-grouse appears critical to the species' future persistence (Wisdom et al., in press).

Habitat Description

Sage-grouse are entirely dependent upon healthy sagebrush communities for all stages of their life cycle, with extensive areas of this habitat type required year-round. Sage-grouse have a high fidelity to their seasonal habitats (breeding, brood-rearing, and wintering habitats), and females commonly return to the same areas to nest each year. Breeding, nesting, and early brood-rearing habitats require 15 to 25 percent sagebrush canopy cover with a perennial grass and forb understory (Idaho Sage-grouse Advisory Committee, 2006). During the spring, the majority of females nest under sagebrush (BLM, 2007a; Connelly et al., 2004; Connelly et al., 2000). Female sage-grouse have been documented nesting from within 0.2 miles to over 12 miles of the initial lek of capture (BLM, 2007b). Brood-rearing habitats are used from summer into fall, and usually have less dense sagebrush canopy than nesting habitats and generally have a higher proportion of grasses and forbs in the understory. Because the diet of chicks consists of forbs and insects, diverse plant communities with abundant insect populations are especially important. Riparian meadows, springs, and streams are important during late brood-rearing, especially in dry years, as these areas produce the forbs and insects necessary for juvenile birds. During winter, sage-grouse feed almost exclusively on sagebrush leaves and buds, so exposure above the snow, rather than canopy cover, is critical (BLM, 2004). Important periods for the species include display/breeding (February 15 through May 10), nesting (March 20 through May 30), and winter (January 1 through March 15). Additional information describing habitat can be reviewed in Connelly et al. (in press).

Within the Jarbidge Field Office, lek attendance by male sage-grouse begins in early February and runs through early May (BLM, 2007b). Lekking periods are similar for the Wells Field Office. Sage-grouse leks typically occur in open areas in or adjacent to sagebrush-dominated habitats, often in proximity to nesting habitats. Leks normally have less herbaceous cover and shrub cover than surrounding areas. Leks may be natural openings within sagebrush communities (e.g., dry stream channels, ridges, and grassy meadows) or openings created by human disturbances (e.g., edges of stock ponds, burned areas, gravel pits, sheep bed grounds, and roads, etc.; Connelly et al., in press). In the Jarbidge Field Office, leks have been observed on low sagebrush ridges, natural openings, edges

of meadows or burns, road/jeep trail intersections, salting areas, and near livestock water troughs or ponds (BLM, 2007b). Lek habitat is not considered limiting to sage-grouse populations. (Connelly et al. in press).

In 2000, Idaho BLM and IDFG collaborated to develop an 'Idaho sage-grouse habitat planning map' to guide conservation activities (BLM, 2008a). Key habitat is defined as areas of generally intact sagebrush that provide sage-grouse habitat during some portion of the year. Key habitat may or may not provide adequate nesting, early brood-rearing and winter cover due to elevation, snow depth, lack of early season forbs, limited herbaceous cover, or small sagebrush patch size (BLM, 2008a). Three habitat restoration types are also classified: Restoration Type I (R1), Restoration Type II (R2), and Restoration Type III (R3; BLM, 2008a). R1 habitats consist of native and/or introduced perennial bunchgrasses. They are sagebrush-limited areas characterized by perennial grass species composition and/or structure that should provide suitable potential nesting habitat in the future, once sufficient sagebrush cover is reestablished. These sites have the potential to be restored to good ecological condition for sage-grouse through natural recovery or by seeding/planting sagebrush. Sage-grouse may use R1 habitat during summer, late brood-rearing, or fall, depending on forb and sagebrush availability. After restoration or recovery of sagebrush, these sites may become key habitat. R2 habitats have annual grass understories. They are dominated or strongly influenced by invasive annuals such as cheatgrass, medusahead rye (*Taeniatherum caputmedusae*) or similar species. Areas with sagebrush may be present, but in general, understories are not suitable for sage-grouse. R2 habitats may be reclassified as R1 once a restoration seeding has been determined to be successful. R3 habitats include areas where junipers and/or other conifer species are encroaching into sage-grouse habitat areas. Opportunities exist for improving habitat through appropriate fire management, prescribed fire, chemical, or mechanical methods. R3 habitats may be reclassified as R1, R2 or key as appropriate once conifer control efforts have been completed. The Idaho sage-grouse habitat planning map was refined for the project area by excluding habitats that sage-grouse do not generally prefer, such as rocky breaks, evergreen mountain brush, and mountain mahogany. The habitat map was expanded to include the Nevada portion of the project area and the southern haul route options (Figure 3.2.2-2).

Project Area Habitat

The majority of the project area and larger analysis areas are comprised of the key habitat type, indicating the quality of sagebrush habitat and importance of this area to sage-grouse (Table 3.2.2-2, Figure 3.2.2-2). Habitat conditions and other regional factors, such as wildfires, play a role in the suitability of the project area for sage-grouse. Wildfires over the past two decades have resulted in a significant loss of sagebrush in the Jarbidge and Wells Field Offices (BLM, 2007c; BLM, 2008b). However, much of the vegetation in the project area and immediate vicinity has not been burned extensively, and thus provides relatively intact sagebrush habitat for sage-grouse (Figure 3.2.2-2). Following the Murphy Complex Fires and Scott Creek Fire of 2007, the project area and Brown's Bench to the east provides the highest quality remaining winter and breeding habitat in the Jarbidge area for sage-grouse (Connelly, 2009).

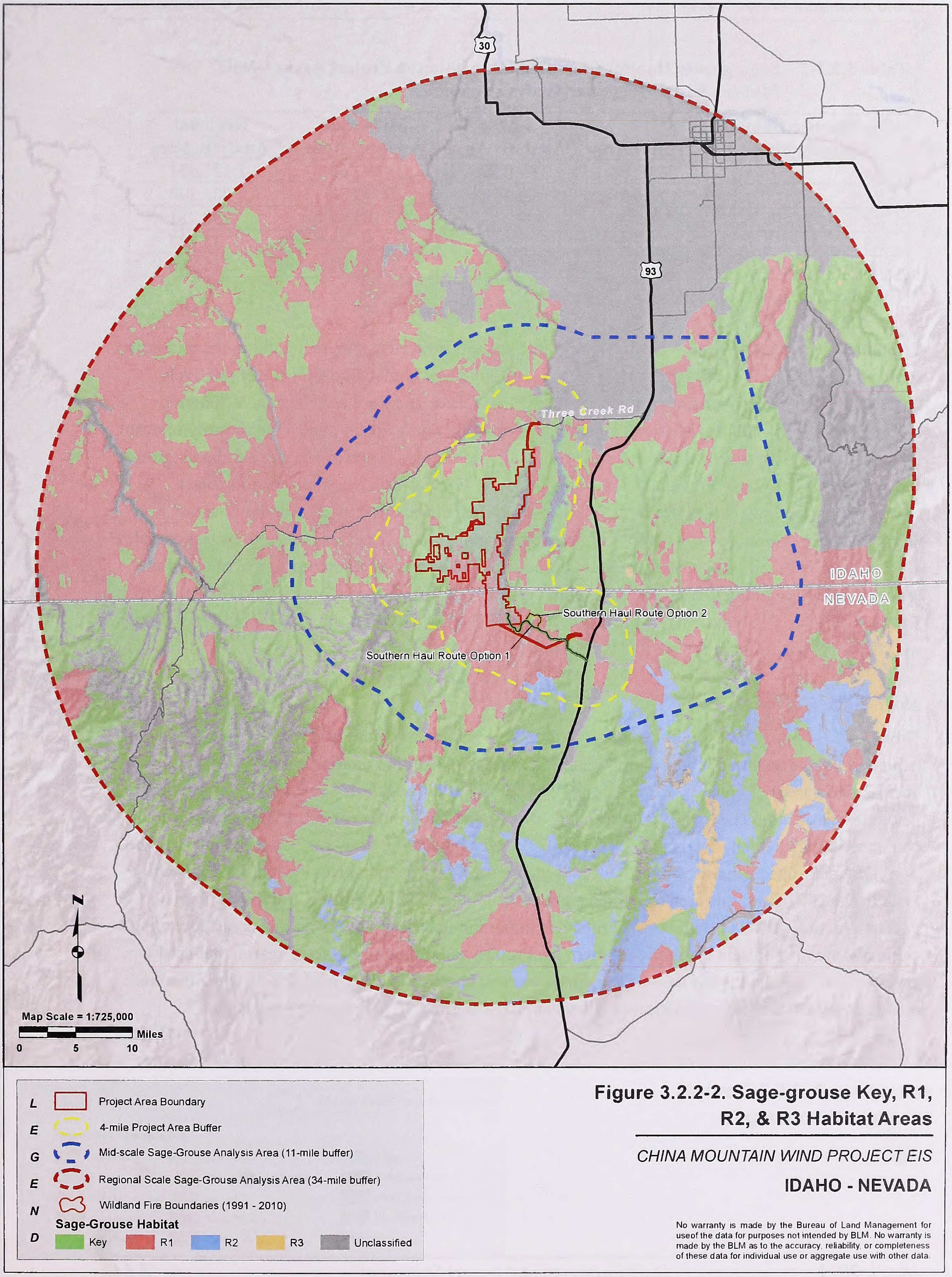

Figure 3.2.2-2. Sage-grouse Key, R1, R2, & R3 Habitat Areas

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Table 3.2.2-2. Sage-grouse Habitat Classification within the Project Area, 4-Mile, Mid-Scale, and Regional Analysis Areas.

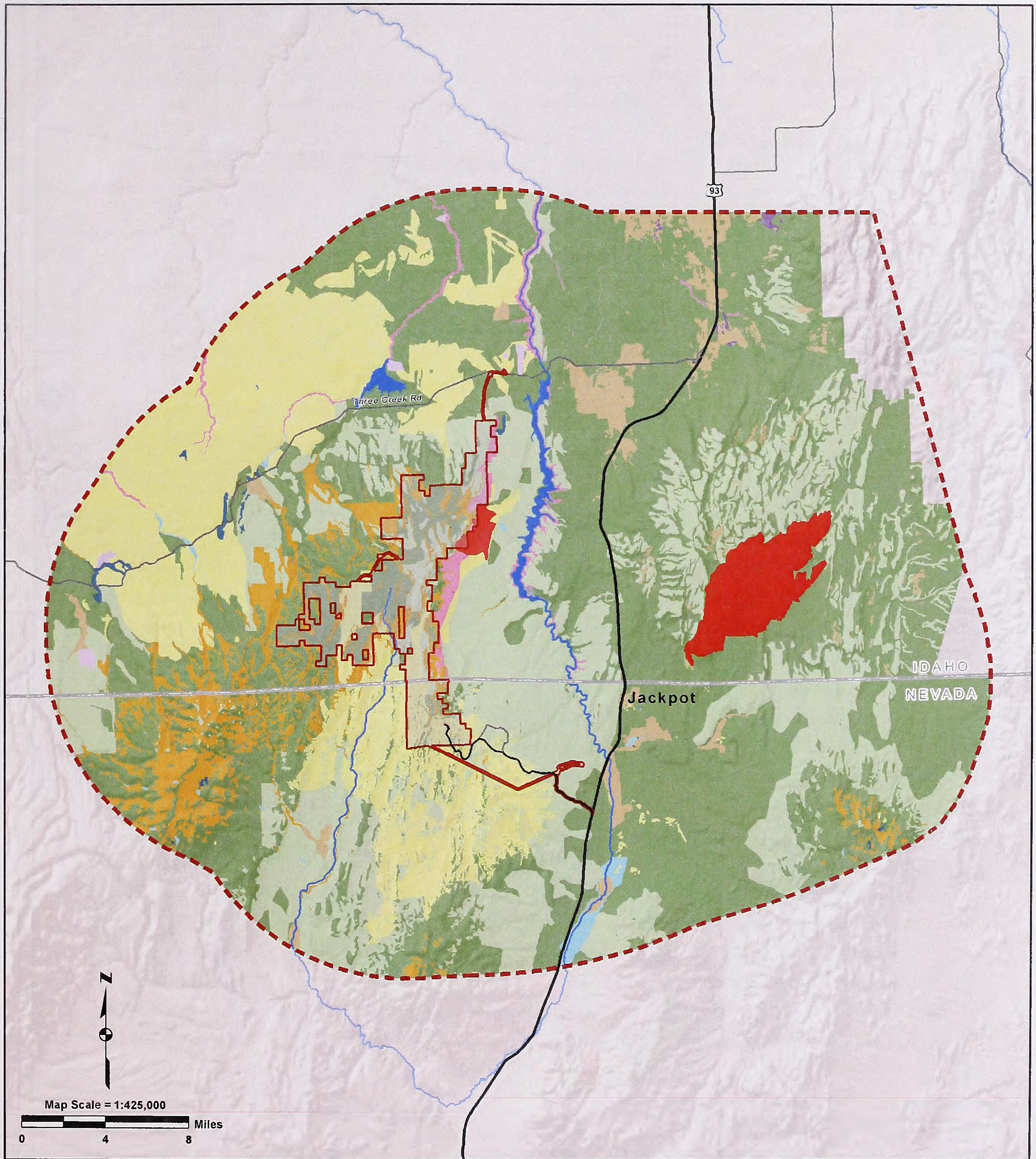
Sage-grouse Habitat Classification[1]	Project Area	4-Mile Analysis Area	Mid-Scale Analysis Area	Regional Analysis Area
Key	22,518	125,056	489,062	1,435,531
R1	8,156	70,276	255,634	903,573
R2	0	0	10,097	138,781
R3	0	2,083	258	33,822
UC (unclassified)	1,340	17,284	78,292	714,366

[1] Based on Categories defined in BLM, 2008a

Vegetation "complexes" as they relate to sage-grouse are portrayed in Figure 3.2.2-3 at the mid-scale analysis area. This shows that the project area is located in one of the largest blocks of relatively intact sagebrush habitat remaining in the Jarbidge Field Office and northern Nevada. Vegetation groups (Section 3.2.1.1) were lumped together to create this figure, as they were biologically relevant for sage-grouse. Tall sagebrush includes the mountain big sagebrush and Wyoming sagebrush groups and represents 48 percent of the mid-scale analysis area. The low sagebrush includes the black sagebrush and low sagebrush groups and represents 24 percent of the mid-scale analysis area. Grasslands, consisting primarily (88%) of native perennial grasses, represent the next largest complex at 17 percent of the mid-scale analysis area. In the southern portion of the project area, much of the areas classified as grassland are native perennial grasses that have become established since the 2007 Scott Creek Fire. The remainder of the analysis area (11%) is comprised mostly of mountain brush or woodland (5%), agriculture (3%), and breaks (1%).

Haul Route Habitat

Table 3.2.2-3 displays the classification of sage-grouse habitat along the haul routes. Sage-grouse habitat along the northern inbound haul route is comprised of similar amounts of key, R1, and unclassified habitat (Figure 3.2.2-4). It consists primarily of tall sagebrush and native and non-native perennial grasslands. The majority of the southern inbound haul routes (option 1 and option 2) are comprised of R1 habitat, due largely to the 2007 Scott Creek Fire (Figure 3.2.2-2). Habitat along the southern haul routes consists primarily of low sagebrush followed by native perennial grasslands. Prior to the 2007 fires, this area contained a greater amount of low sagebrush. Adjacent unburned vegetation consists of low sagebrush shrublands important to sage-grouse. Riparian areas, including wetlands, are also present along the southern haul routes and provide late brood-rearing habitat for sage-grouse. The majority of the outbound haul route is unclassified (Figure 3.2.2-4). The outbound haul route consists of a combination of tall sagebrush and non-native perennial grassland.



LEGEND

Project Area Boundary

Mid-scale Sage-Grouse Analysis Area

Vegetation Complexes

Agriculture
Barren
Breaks
Developed
Grassland
Low Sage
Mtn. Brush or Woodland
No Data
Rabbitbrush
Recent Burn
Riparian
Salt Desert Shrub
Semi-Wet Meadow
Tall Sagebrush
Water

Figure 3.2.2-3. Sage-grouse Vegetation Complexes

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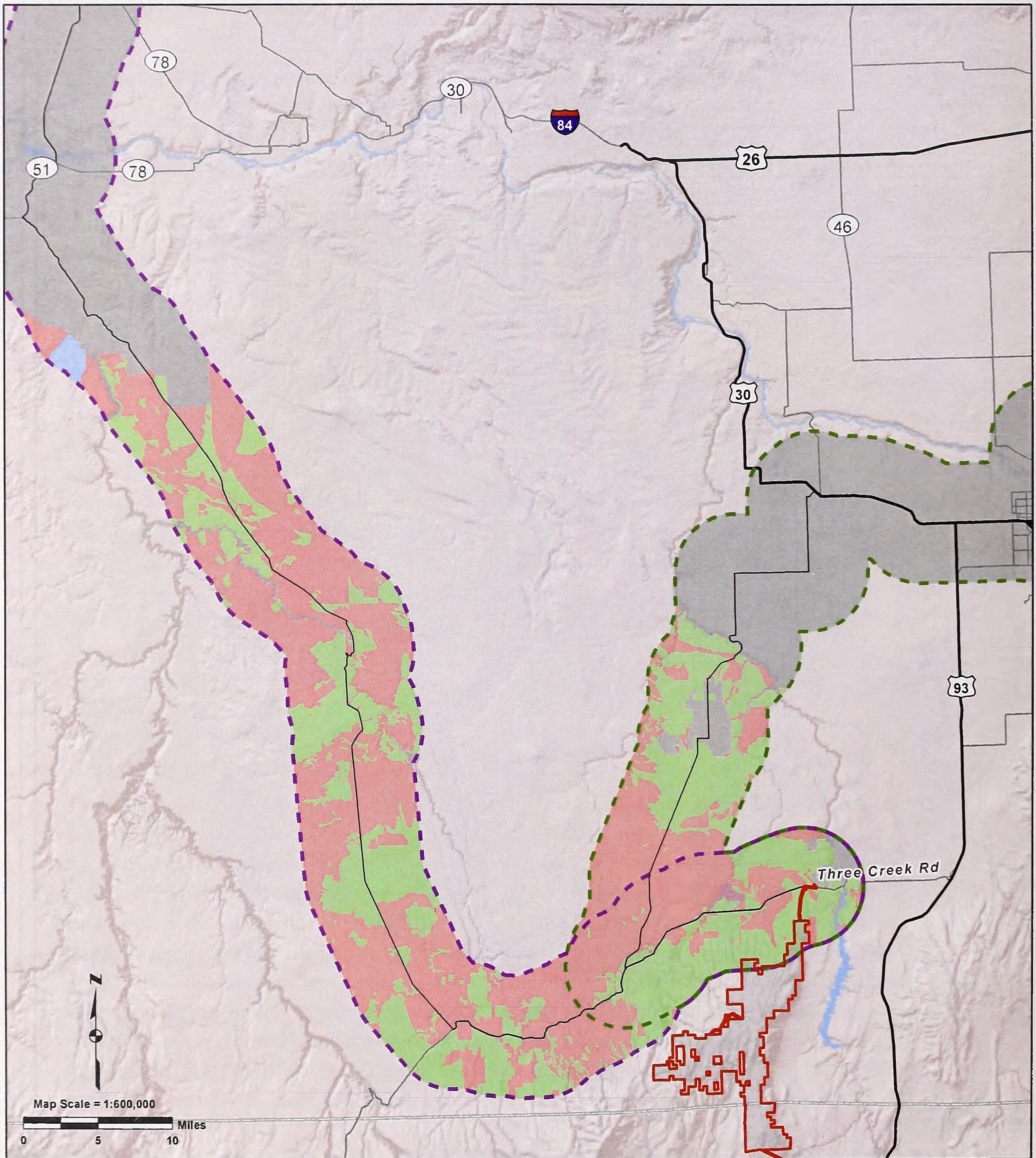

LEGEND

- Project Area Boundary
- Northern Inbound Haul Route Analysis Area (4 miles)
- Outbound Haul Route Analysis Area (4 miles)

Sage-grouse Habitat

Key | R1 | R2 | R3 | Unclassified

Figure 3.2.2-4. Sage-grouse Key, R1, R2, & R3 Habitat Areas along the Northern Inbound and Outbound Haul Routes

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Table 3.2.2-3. Sage-grouse Habitat Classification along the Southern and Northern Inbound Haul Routes and Outbound Haul Route.

Sage-grouse Habitat Classification[1]	Northern Inbound Haul Route	Outbound Haul Route	Southern Haul Option 1	Inbound Route Option 2
Key	2,295	1,107	226	316
R1	2,663	963	540	550
R2	0	0	0	0
R3	0	0	0	0
UC (unclassified)	2,231	2,613	18	18

[1] Based on Categories defined in BLM, 2008a. No R2 or R3 habitat is present.

Sage-grouse Monitoring

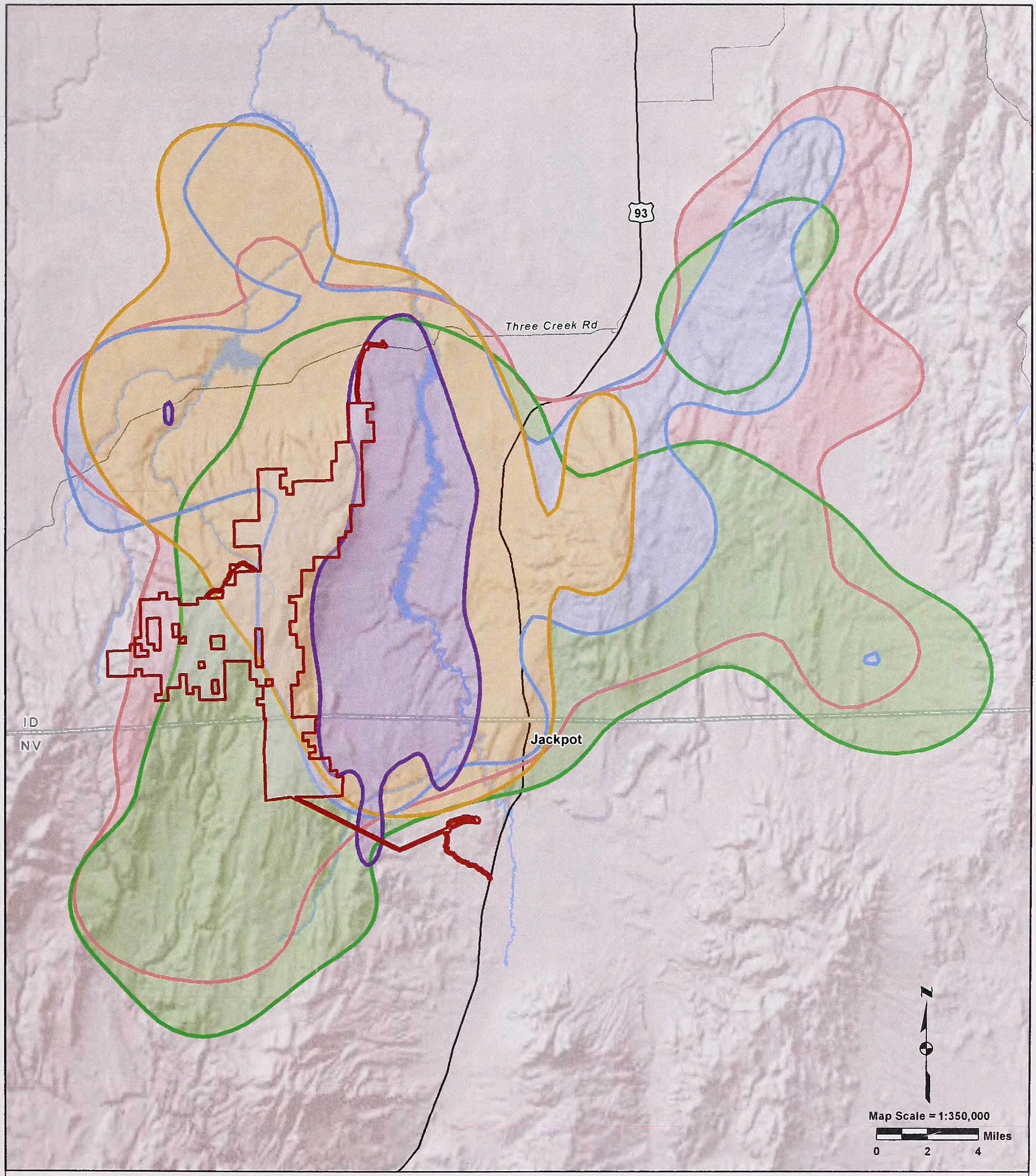
IDFG has been monitoring sage-grouse leks for over 50 years. They have monitored sage-grouse at Browns Bench using radio-telemetry in 1992 and 1993 and annually since 2002. The main objectives of the IDFG studies are to determine (1) micro-habitat use at nest sites, (2) lek attendance rates, (3) factors affecting attendance rates, and (4) variables affecting detection of attending birds to ultimately use lek counts for predicting abundance (Connelly & Musil, 2007). Additional monitoring has been occurring on Browns Bench since 2009 with the objective to determine movements, nesting, and habitats on Browns Bench and the project area (Connelly et al., 2009). Although occupied leks do not currently occur within the project area, sage-grouse data shows that breeding and nesting consistently occur on Browns Bench to the east of the ROW preference area, and that one successful nest has been recorded in the project area (Connelly et al., 2009). Data collected in the Browns Bench area indicated that some of the sage-grouse move large distances throughout the year (>18.6 miles) and are likely migratory (Connelly et al., 2009). For some sage-grouse there appears to be a west-southwest movement pattern from the nesting and breeding grounds of Browns Bench to upland summer and fall habitats within the ROW preference area. Of the 288 sage-grouse radio-marked on Browns Bench in Idaho since 1992, 40 percent entered or crossed the ROW preference area as of 2009, representing considerable movements by these sage-grouse in and through the project area (IDFG, unpublished). Data collected during these studies also indicated that sage-grouse using the Browns Bench area are linked to those in the Shoshone Basin and parts of northern Nevada, and that a large influx of wintering sage-grouse are typically seen on Browns Bench. The data indicates that Browns Bench provides key winter habitat for at least three breeding populations: Shoshone Basin, Browns Bench, and northern Nevada (Connelly et al., 2009). Data collected on sage-grouse in Nevada follows the discussion of sage-grouse use in Idaho.

Using the sage-grouse telemetry data collected for sage-grouse captured in Idaho, IDFG plotted fixed kernel use area polygons in Geographic Information System that determine sage-grouse seasonal use patterns in the project area. Details regarding fixed kernel density estimators can be found in Worton (1989). Essentially, the method utilizes locations of animals collected with radio-telemetry technology and, based on their density, draws a line around the animal locations to depict a "utilization distribution." A 95 percent utilization distribution depicts the area that the animals were located 95 percent of the time. Data used to develop these use areas included locations of radio-

collared male and female sage-grouse during the following time intervals between 1993 and 2007: spring (March 1 – May 31), summer (June 1 – August 31), fall (September 1 – November 30), winter (December 1 – February 28), and nesting (actual nest locations). These use areas were then overlaid on the project area and evaluated with several different spatial data sets, including vegetation ground cover, sage-grouse habitats, elevation, slope, aerial photos, and the project layout.

Ninety-five percent fixed kernel use areas indicated that sage-grouse use of the project area varied by season. Sage-grouse use occurred during all seasons, but was limited to only a very small portion of the ROW preference area, transmission line, and southern haul route options in the winter, as use was confined primarily to Browns Bench. An overview of the seasonal sage-grouse use areas for females and males is presented in Figures 3.2.2-5 and 3.2.2-6, respectively. For females, spring use occurred on the eastern ridges of the project area, summer use occurred essentially in the entire ROW preference area, fall use occurred in the majority of the ROW preference area, winter use was confined only to small portions of the northeastern ridgeline, transmission line, and southern haul routes, and nesting overlapped the spring use area plus a small area further west (Figures 3.2.2-7 through 3.2.2-11). Use of the ROW preference areas by male sage-grouse was similar to that of females, but they used slightly more of the area. Spring use occurred in the majority of the ROW preference area with the exception of the western-most portion, summer use occurred in the entire ROW preference area, fall use occurred on the eastern ridge of the project area and the next ridgeline to the west, and winter use was confined to small portions of the northeastern ridgeline, transmission line, and southern haul routes (Figures 3.2.2-11 through 3.2.2-15).

Table 3.2.2-4 and Table 3.2.2-5 and Figures 3.2.2-7 through 3.2.2-15 display the acres of spring, summer, fall, and winter use areas and nesting habitat occurring in the project area and along the haul routes based on the kernel use areas for female and male sage-grouse captured in Idaho. These tables and Figures 3.2.2-5 and 3.2.2-6 also display acres of the entire 95 percent fixed kernel use areas. It should be noted that the telemetry data used in this analysis was not collected with the intent of calculating seasonal use areas for this project (see IDFG study objectives stated above) and only included data on sage-grouse collared in Idaho. Data collection was more intensive during the spring and summer than during the fall and winter, thus data presented potentially underestimates the use of the project area by sage-grouse during the fall and winter. However, given the abundance of data collected, it was determined suitable as a predictor of habitat use. It is expected that use areas depicted in Figures 3.2.2-7 through 3.2.2-15 would be expanded further into Nevada once telemetry data for sage-grouse captured in Nevada are included.



L Project Area Boundary
E 95% Fixed Kernal Use Area Estimates
G Spring (March 1 - May 31)
Nesting
E Summer (June 1 - August 31)
N Fall (September 1 - November 30)
D Winter (December 1 - February 28)

Figure 3.2.2-5. Female Seasonal Sage-grouse Kernal Use Area Estimates

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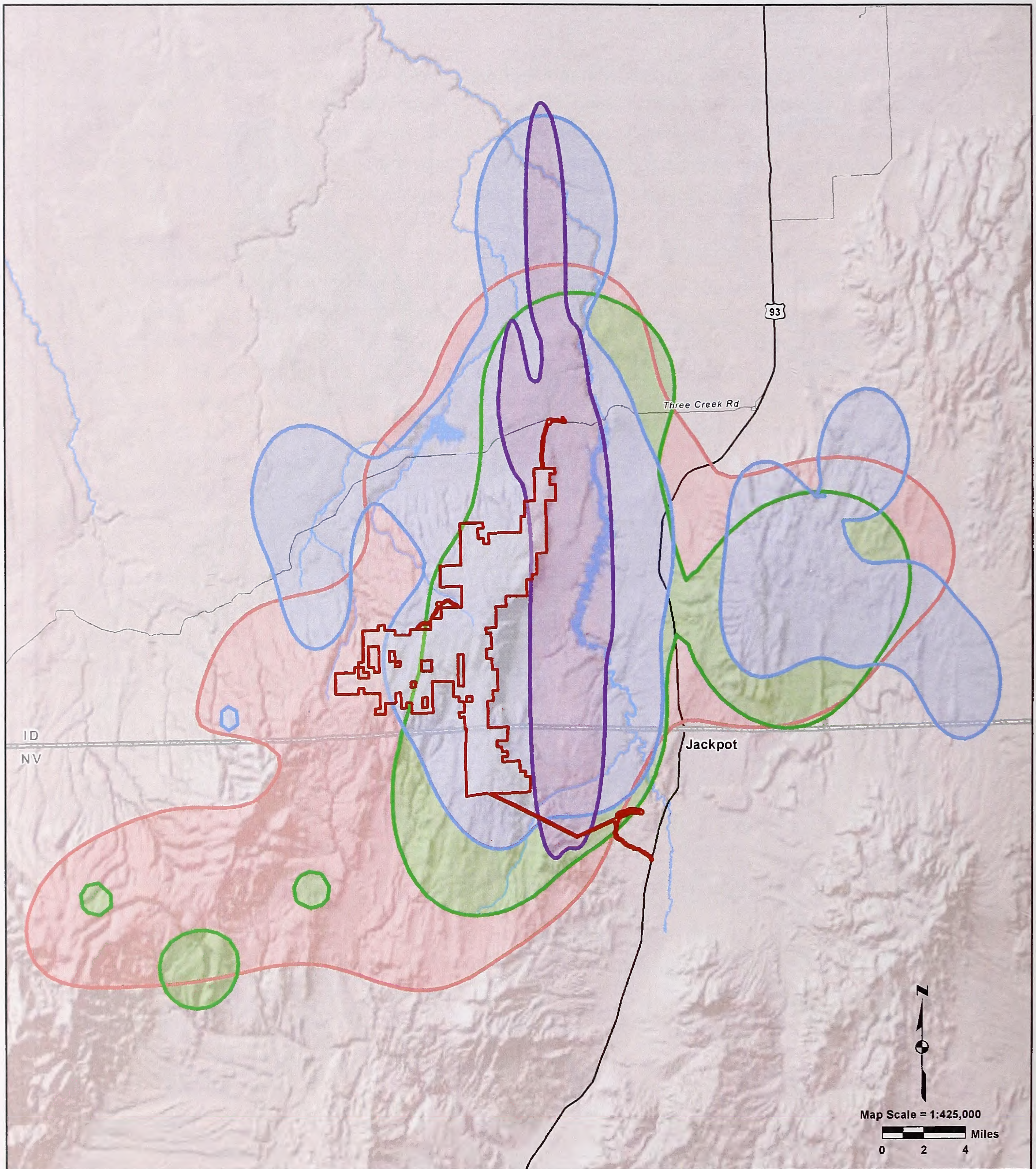

L Project Area Boundary

E **95% Fixed Kernal Use Area Estimates**

G Spring (March 1 - May 31)

E Summer (June 1 - August 31)

N Fall (September 1 - November 30)

D Winter (December 1 - February 28)

Figure 3.2.2-6. Male Seasonal Sage-grouse Kernal Use Area Estimates

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Sage Grouse Habitat Type	Acres within 95% Kernal Estimates: Project Area	Acres within 95% Kernal Estimates: Southern Haul Route Option 1	Acres within 95% Kernal Estimates: Southern Haul Route Option 2
Breaks	819	2	12
Grassland	1,274	122	205
Low Sagebrush	5,084	126	262
Mountain Brush or Woodland	3,223	0	0
Recent Burn	313	0	0
Tall Sagebrush	4,532	0	31

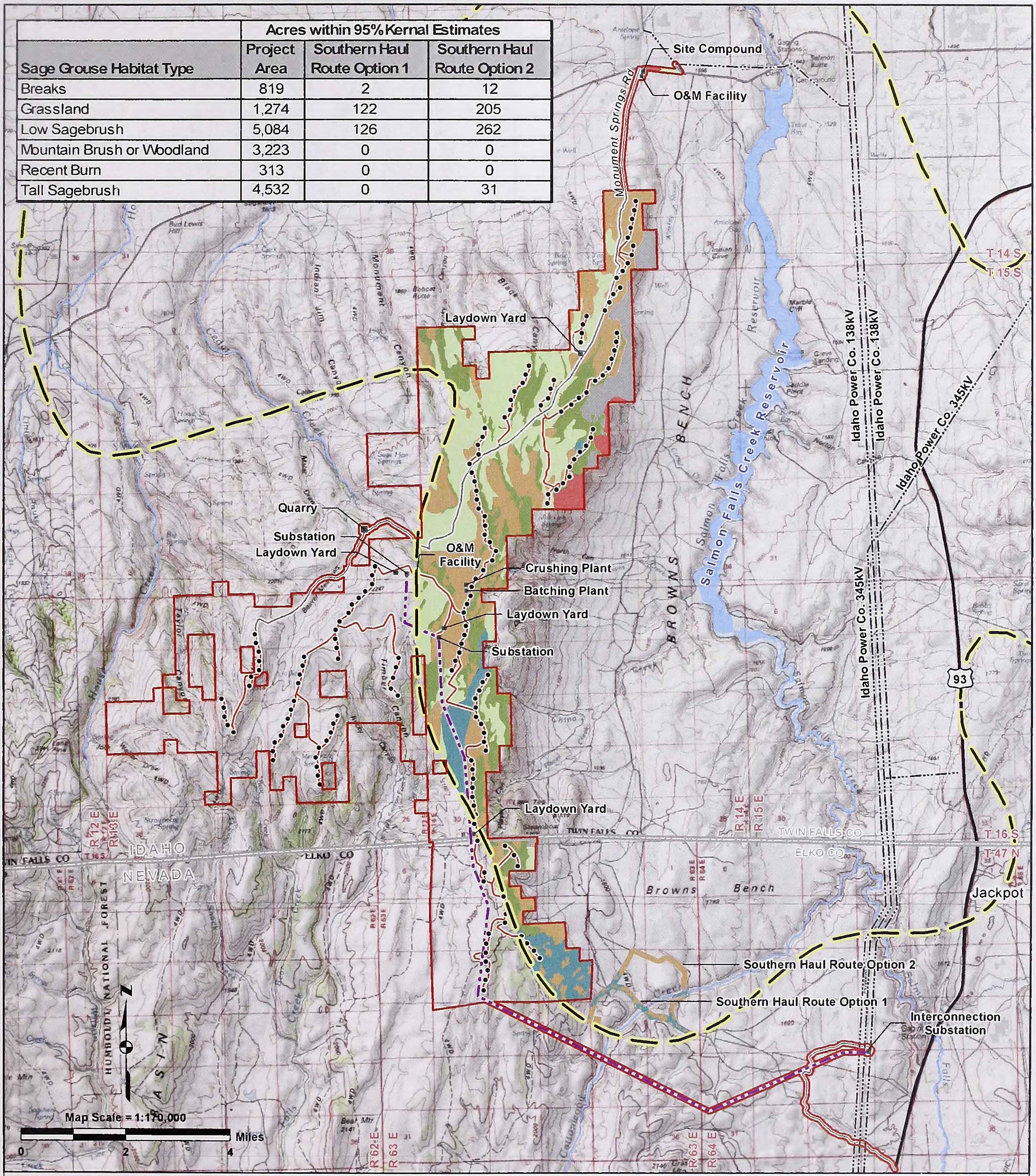

Figure 3.2.2-7. Spring Female Sage-grouse Kernal Estimates & Habitat

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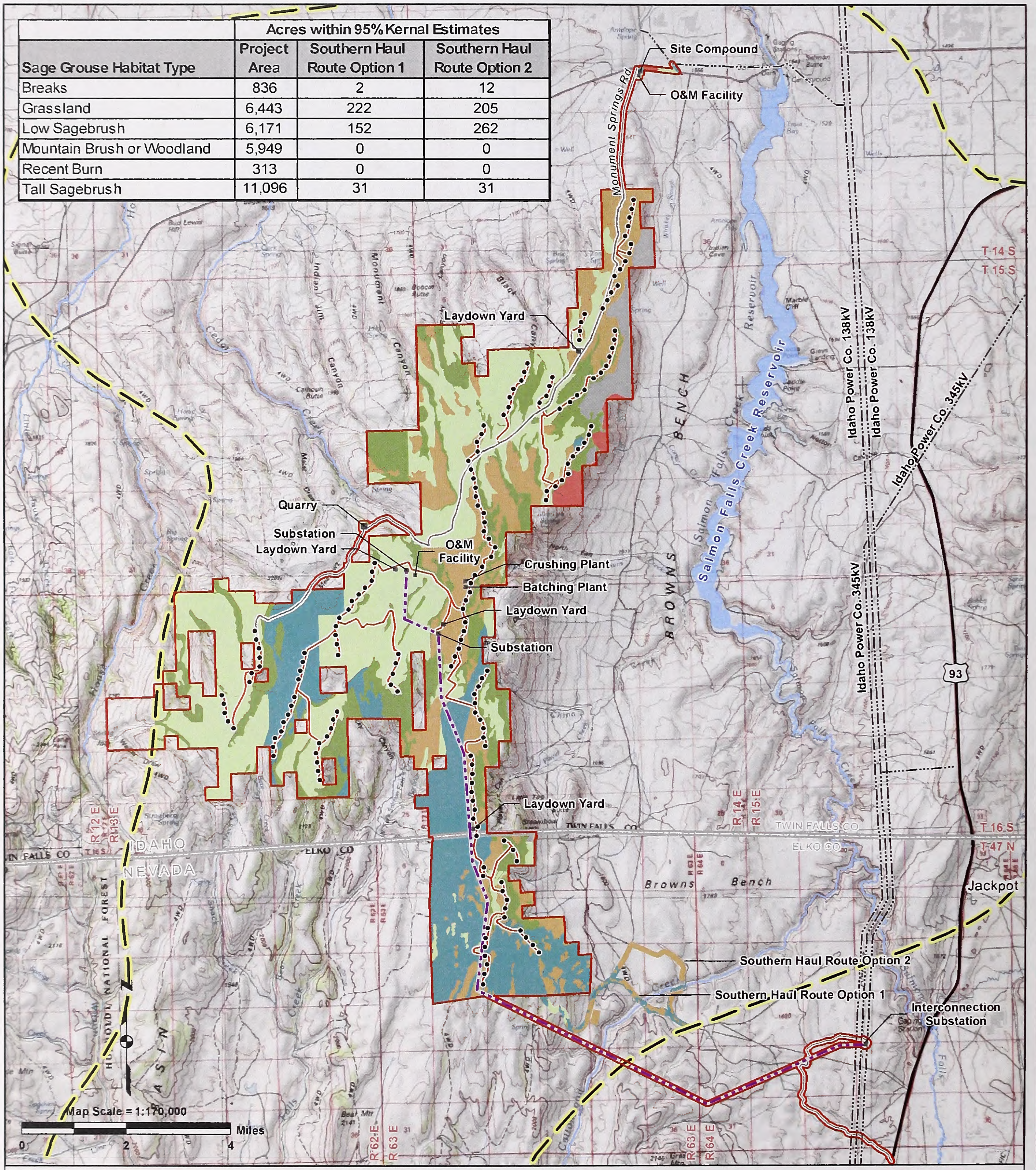
Sage Grouse Habitat Type	Acres within 95% Kernal Estimates		
	Project Area	Southern Haul Route Option 1	Southern Haul Route Option 2
Breaks	836	2	12
Grassland	6,443	222	205
Low Sagebrush	6,171	152	262
Mountain Brush or Woodland	5,949	0	0
Recent Burn	313	0	0
Tall Sagebrush	11,096	31	31



Project Area Boundary

Turbine Location (Alt B1)

Proposed Transmission Line (345 kV)

Existing Transmission Line

Proposed New Road

Existing Road - Minor Upgrade Proposed

95% Fixed Kernal Estimate (Volume)
(Based on telemetry data of grouse captured in Idaho)

Sage-grouse Habitat Type

Breaks
Grassland
Low Sagebrush
Mountain Brush or Woodland
Recent Burn
Tall Sagebrush

Figure 3.2.2-8. Summer Female Sage-grouse Kernal Estimates & Habitat

CHINA MOUNTAIN WIND PROJECT EIS

IDAHO - NEVADA

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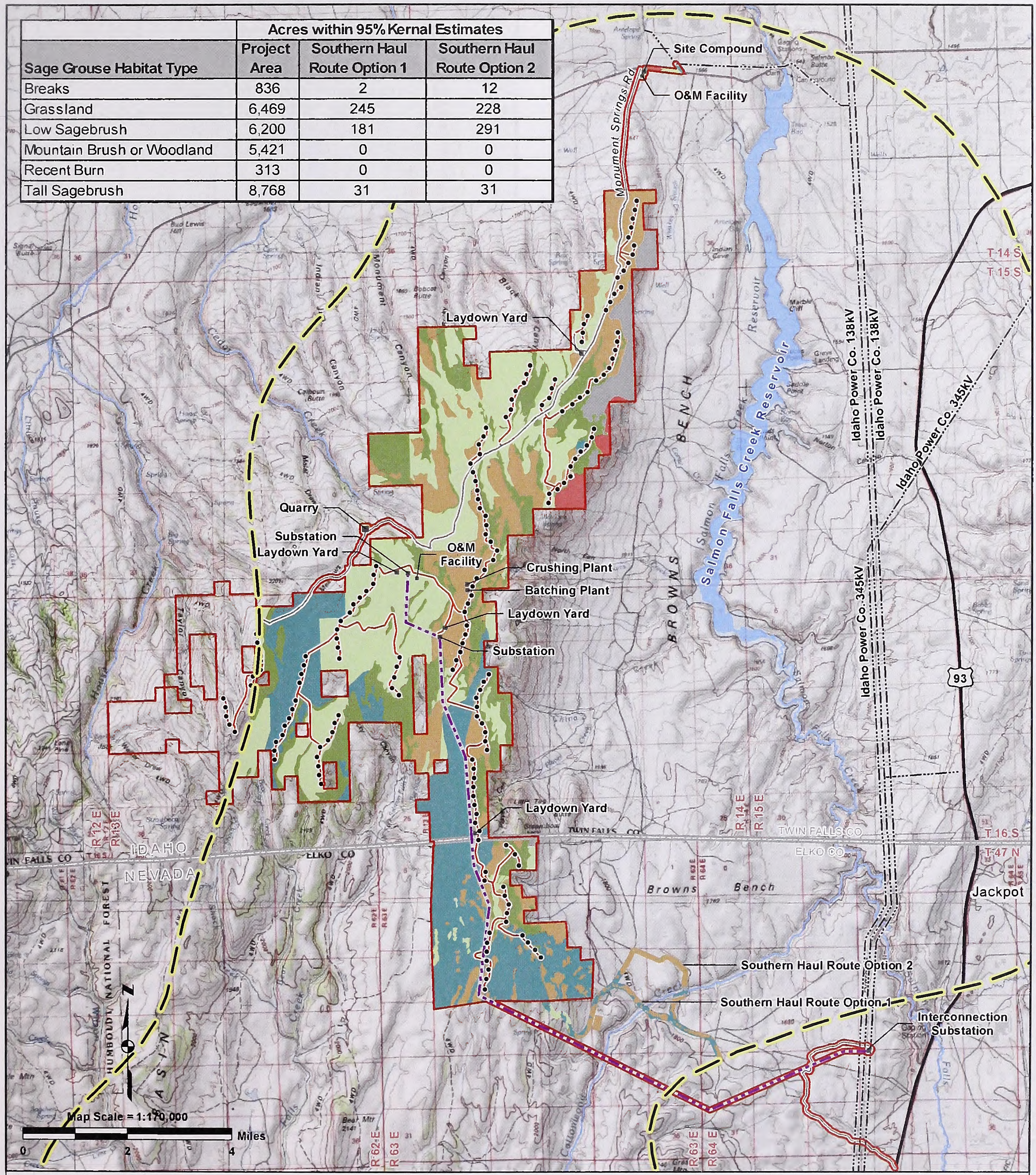

Sage Grouse Habitat Type	Acres within 95% Kernal Estimates		
	Project Area	Southern Haul Route Option 1	Southern Haul Route Option 2
Breaks	836	2	12
Grassland	6,469	245	228
Low Sagebrush	6,200	181	291
Mountain Brush or Woodland	5,421	0	0
Recent Burn	313	0	0
Tall Sagebrush	8,768	31	31

Project Area Boundary
Turbine Location (Alt B1)
Proposed Transmission Line (345 kV)
Existing Transmission Line
Proposed New Road
Existing Road - Minor Upgrade Proposed

95% Fixed Kernal Estimate (Volume)
(Based on telemetry data of grouse captured in Idaho)

Sage-grouse Habitat Type

Breaks
Grassland
Low Sagebrush
Mountain Brush or Woodland
Recent Burn
Tall Sagebrush

Figure 3.2.2-9. Fall Female Sage-grouse Kernal Estimates & Habitat

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	Acres within 95% Kernal Estimates		
Sage Grouse Habitat Type	Project Area	Southern Haul Route Option 1	Southern Haul Route Option 2
Breaks	479	2	0
Grassland	85	34	4
Low Sagebrush	842	34	85
Mountain Brush or Woodland	4	0	0
Recent Burn	139	0	0
Tall Sagebrush	186	0	0

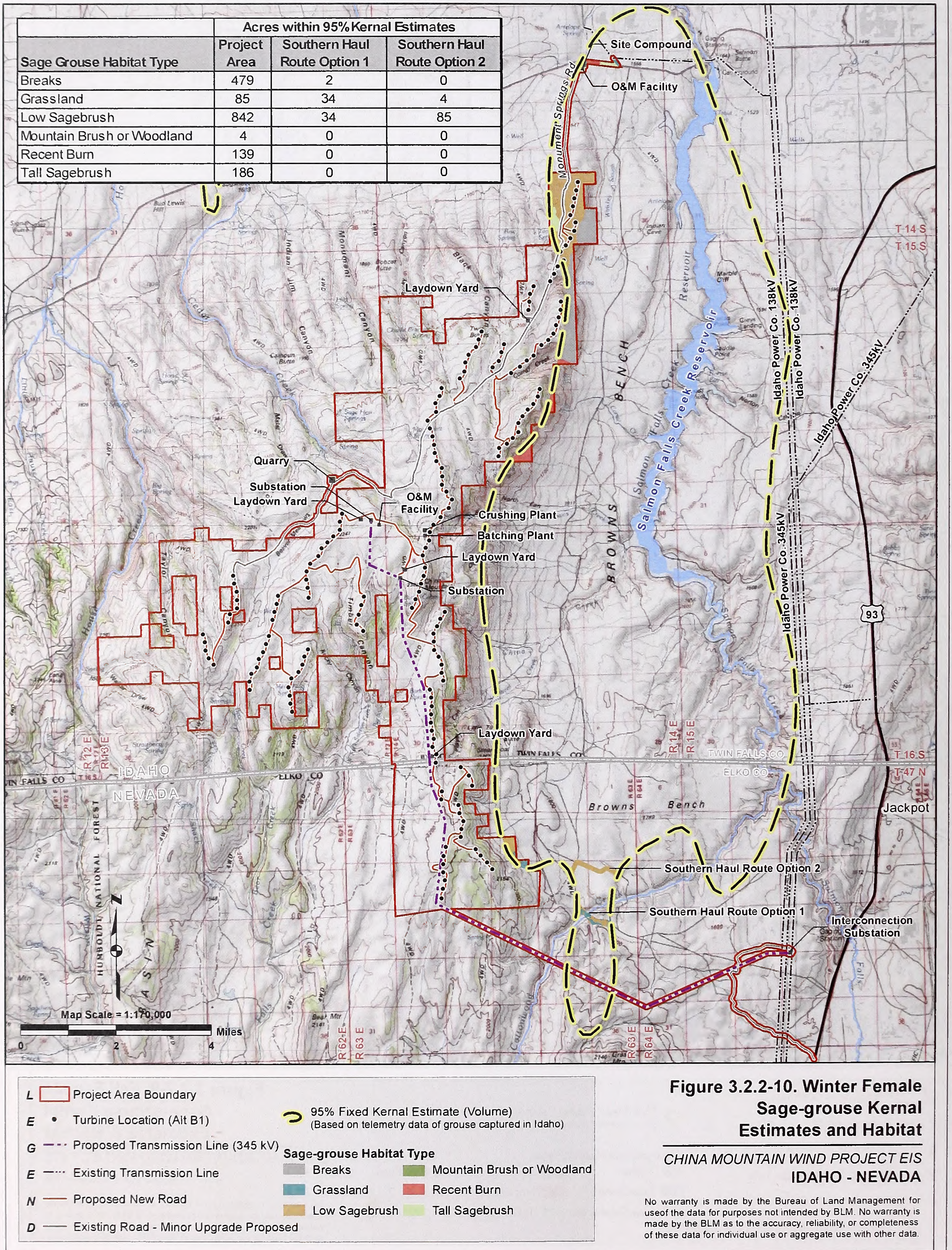

Figure 3.2.2-10. Winter Female Sage-grouse Kernal Estimates and Habitat

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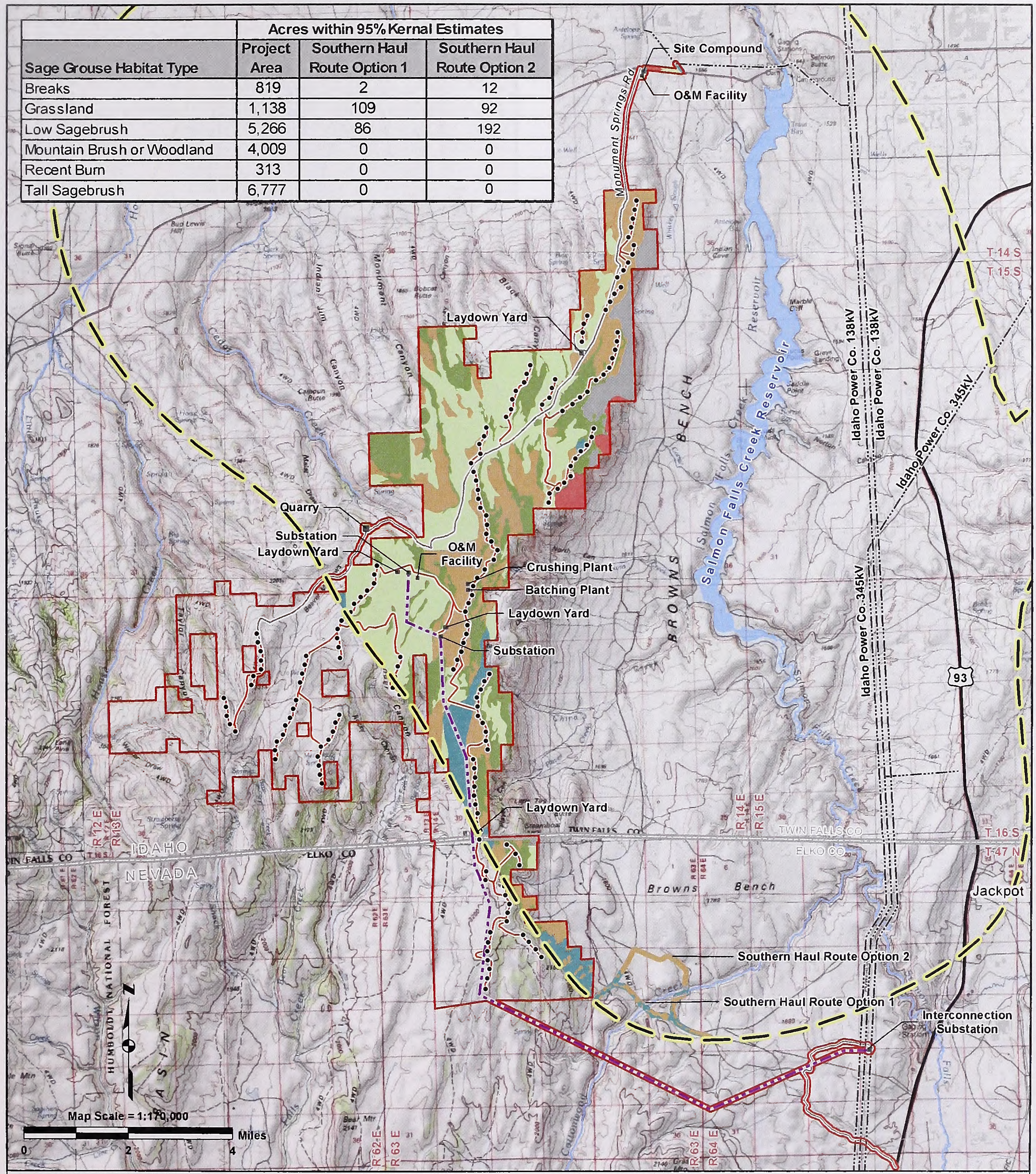
Sage Grouse Habitat Type	Acres within 95% Kernal Estimates		
	Project Area	Southern Haul Route Option 1	Southern Haul Route Option 2
Breaks	819	2	12
Grassland	1,138	109	92
Low Sagebrush	5,266	86	192
Mountain Brush or Woodland	4,009	0	0
Recent Burn	313	0	0
Tall Sagebrush	6,777	0	0



L — Project Area Boundary

E • Turbine Location (Alt B1)

G — Proposed Transmission Line (345 kV)

E — Existing Transmission Line

N — Proposed New Road

D — Existing Road - Minor Upgrade Proposed

95% Fixed Kernal Estimate (Volume)
(Based on telemetry data of grouse captured in Idaho)

Sage-grouse Habitat Type

- Breaks
- Grassland
- Low Sagebrush
- Mountain Brush or Woodland
- Recent Burn
- Tall Sagebrush

Figure 3.2.2-11. Nesting Female Sage-grouse Kernal Estimates & Habitat

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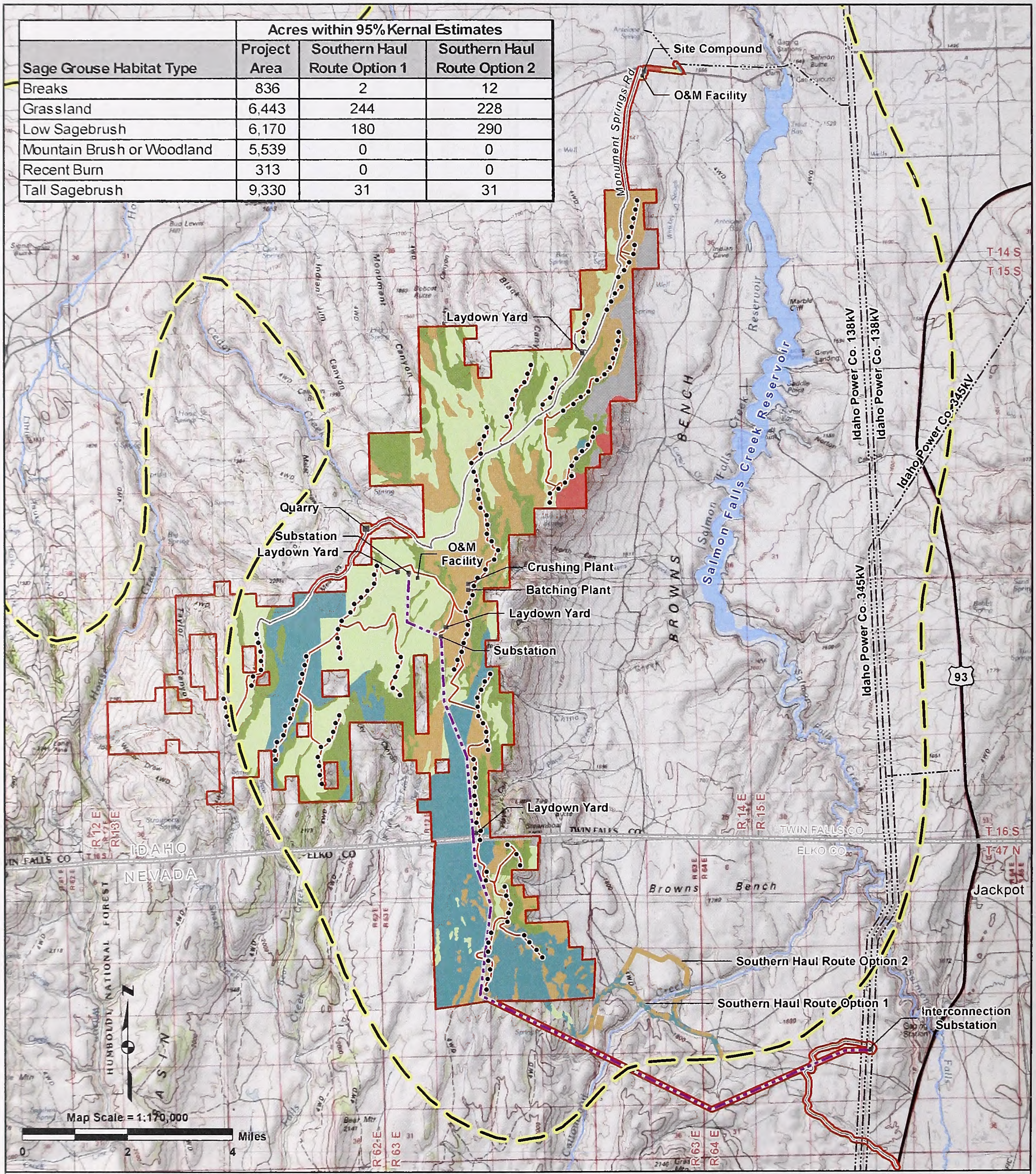

	Acres within 95% Kernal Estimates		
Sage Grouse Habitat Type	Project Area	Southern Haul Route Option 1	Southern Haul Route Option 2
Breaks	836	2	12
Grassland	6,443	244	228
Low Sagebrush	6,170	180	290
Mountain Brush or Woodland	5,539	0	0
Recent Burn	313	0	0
Tall Sagebrush	9,330	31	31

L Project Area Boundary
E Turbine Location (Alt B1)
G Proposed Transmission Line (345 kV)
E Existing Transmission Line
N Proposed New Road
D Existing Road - Minor Upgrade Proposed

95% Fixed Kernal Estimate (Volume)
(Based on telemetry data of grouse captured in Idaho)

Sage-grouse Habitat Type

Breaks
Grassland
Low Sagebrush
Mountain Brush or Woodland
Recent Burn
Tall Sagebrush

Figure 3.2.2-12. Spring Male Sage-grouse Kernal Estimates & Habitat

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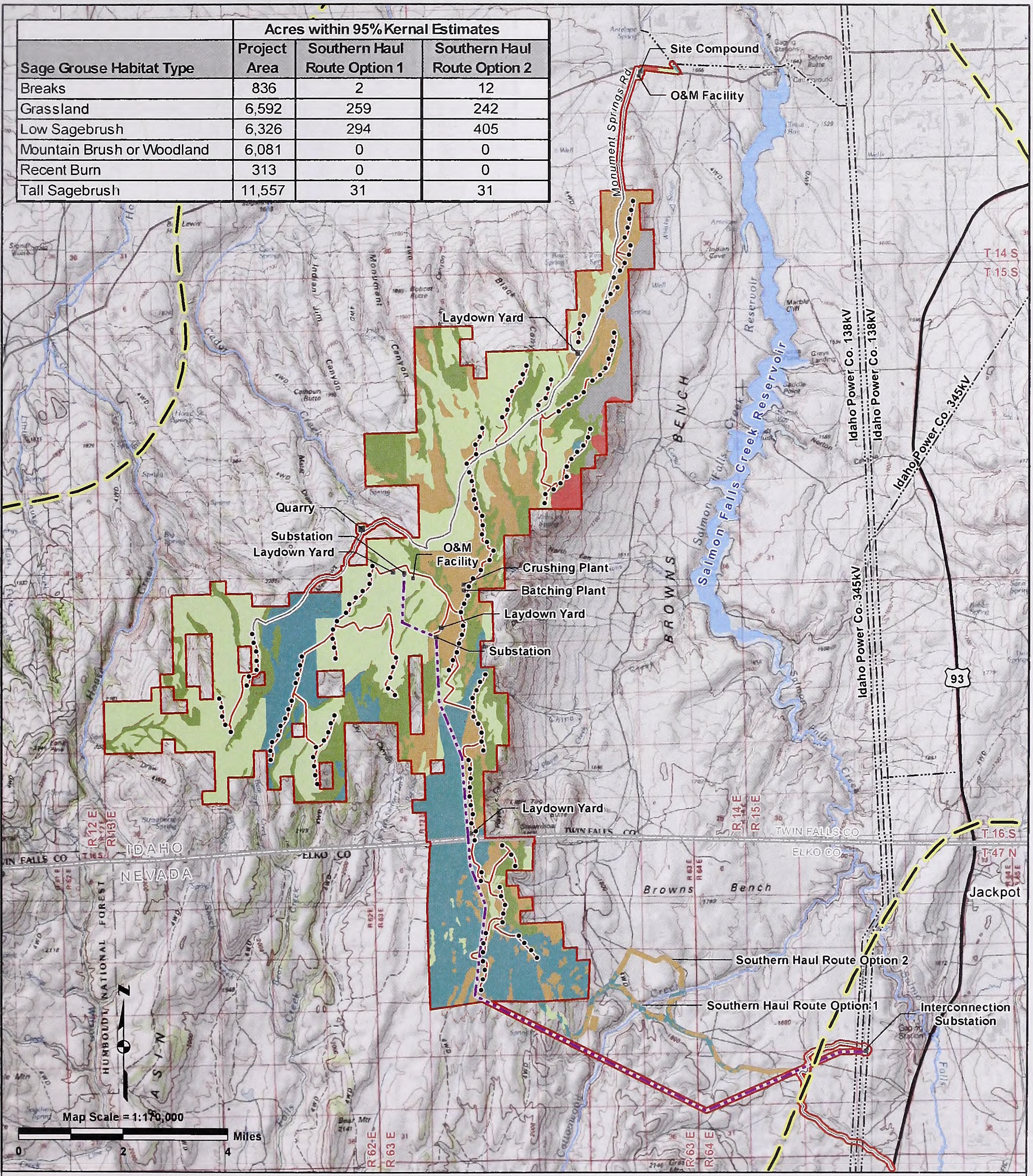

Sage Grouse Habitat Type	Acres within 95% Kernal Estimates		
	Project Area	Southern Haul Route Option 1	Southern Haul Route Option 2
Breaks	836	2	12
Grassland	6,592	259	242
Low Sagebrush	6,326	294	405
Mountain Brush or Woodland	6,081	0	0
Recent Burn	313	0	0
Tall Sagebrush	11,557	31	31

L Project Area Boundary
E Turbine Location (Alt B1)
G Proposed Transmission Line (345 kV)
E Existing Transmission Line
N Proposed New Road
D Existing Road - Minor Upgrade Proposed

95% Fixed Kernal Estimate (Volume)
(Based on telemetry data of grouse captured in Idaho)

Sage-grouse Habitat Type
Breaks
Grassland
Low Sagebrush
Mountain Brush or Woodland
Recent Burn
Tall Sagebrush

Figure 3.2.2-13. Summer Male Sage-grouse Kernal Estimates & Habitat

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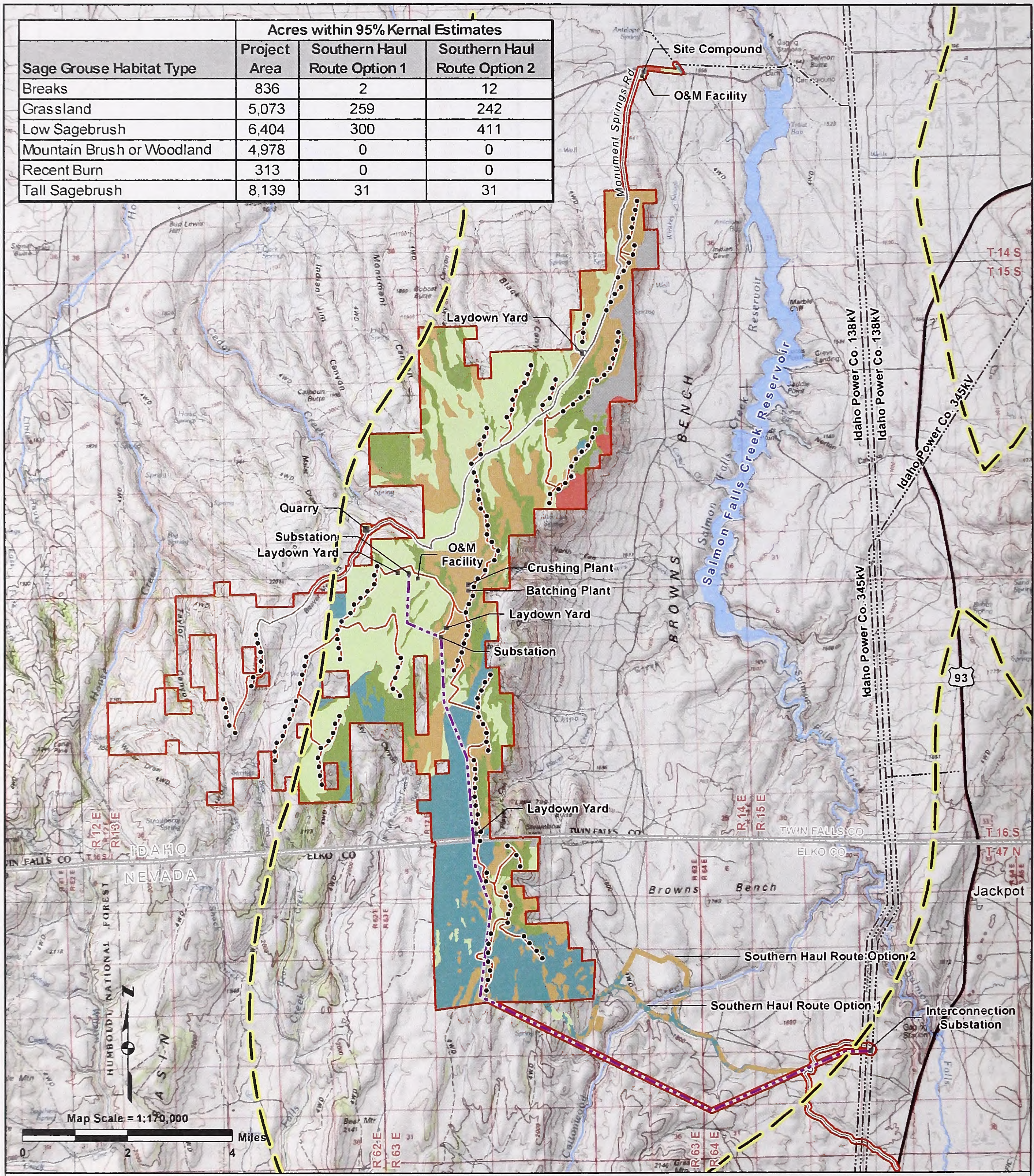
Sage Grouse Habitat Type	Acres within 95% Kernal Estimates		
	Project Area	Southern Haul Route Option 1	Southern Haul Route Option 2
Breaks	836	2	12
Grassland	5,073	259	242
Low Sagebrush	6,404	300	411
Mountain Brush or Woodland	4,978	0	0
Recent Burn	313	0	0
Tall Sagebrush	8,139	31	31



LEGEND

- Project Area Boundary
- Turbine Location (Alt B1)
- Proposed Transmission Line (345 kV)
- Existing Transmission Line
- Proposed New Road
- Existing Road - Minor Upgrade Proposed
- 95% Fixed Kernal Estimate (Volume) (Based on telemetry data of grouse captured in Idaho)

Sage-grouse Habitat Type

- Breaks
- Grassland
- Low Sagebrush
- Mountain Brush or Woodland
- Recent Burn
- Tall Sagebrush

Figure 3.2.2-14. Fall Male Sage-grouse Kernal Estimates & Habitat

CHINA MOUNTAIN WIND PROJECT EIS

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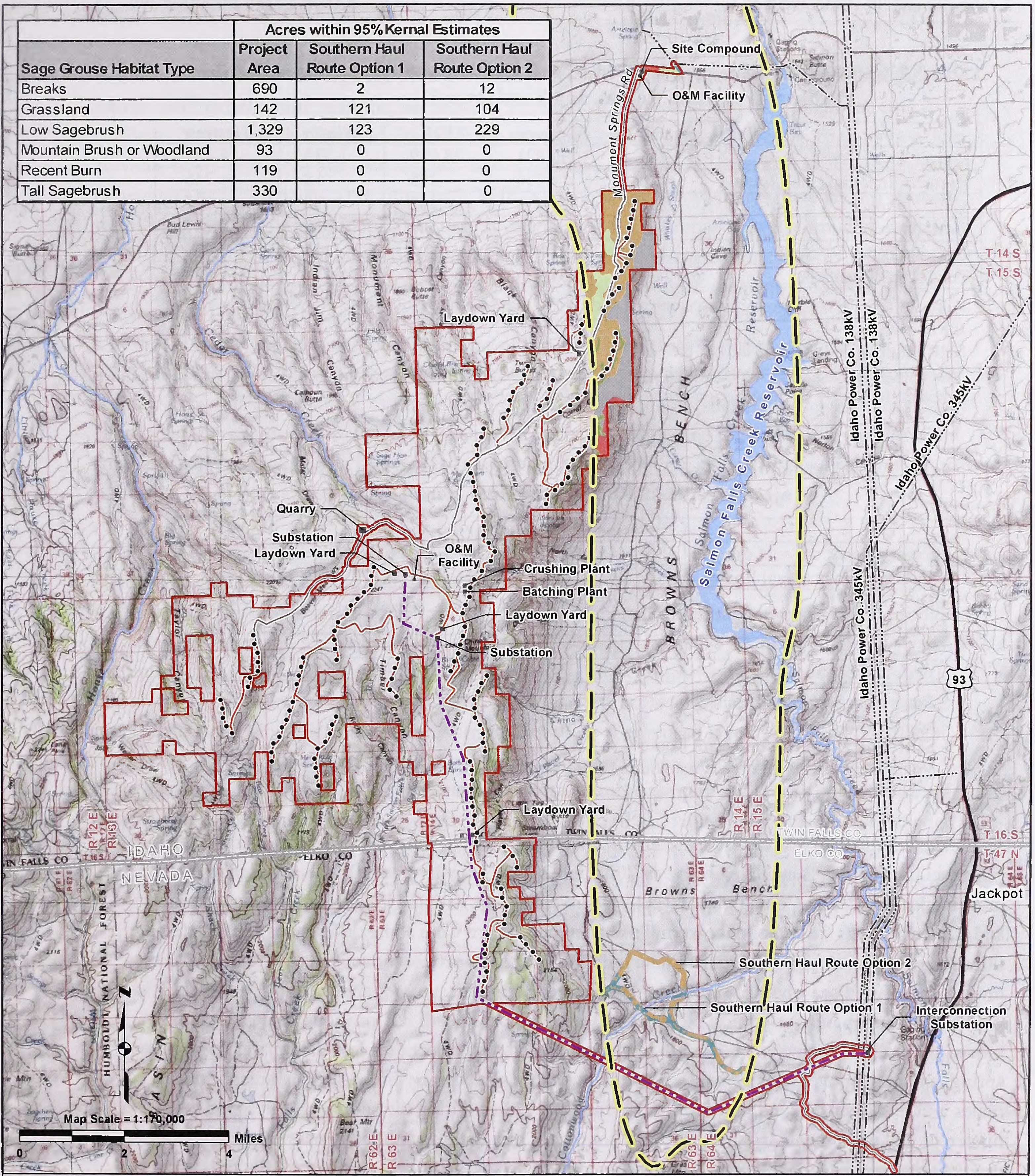
Sage Grouse Habitat Type	Acres within 95% Kernal Estimates: Project Area	Acres within 95% Kernal Estimates: Southern Haul Route Option 1	Acres within 95% Kernal Estimates: Southern Haul Route Option 2
Breaks	690	2	12
Grassland	142	121	104
Low Sagebrush	1,329	123	229
Mountain Brush or Woodland	93	0	0
Recent Burn	119	0	0
Tall Sagebrush	330	0	0



Legend	
Project Area Boundary	95% Fixed Kernal Estimate (Volume) (Based on telemetry data of grouse captured in Idaho)
Turbine Location (Alt B1)	**Sage-grouse Habitat Type**
Proposed Transmission Line (345 kV)	Breaks
Existing Transmission Line	Grassland
Proposed New Road	Low Sagebrush
Existing Road - Minor Upgrade Proposed	Mountain Brush or Woodland
	Recent Burn
	Tall Sagebrush

Figure 3.2.2-15. Winter Male Sage-grouse Kernal Estimates & Habitat

CHINA MOUNTAIN WIND PROJECT EIS

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Table 3.2.2-4. Female[1] Sage-grouse Fixed Kernel Use Areas (95%) by Season for the Project Area, Haul Routes, and Total (acres).

	Spring	Summer	Fall	Winter	Nesting
Project Area	15,245	30,821	28,019	1,735	18,321
Northern Inbound Haul Route	820	794	295	18	746
SHR[2] Option 1	251	410	462	70	197
SHR Option 2	363	528	581	89	297
Outbound Haul Route	1,127	1,097	295	18	1,066
Total Acres Available[3]	237,028	401,994	334,728	58,726	214,835

[1] Acres of female sage-grouse habitat are not additive to that of males since there is overlap between the two sexes.
[2] SHR = Southern Inbound Haul Route
[3] Value incorporates all of the area within the 95 percent fixed kernel use area. Kernel estimates are based on telemetry data from sage-grouse captured in Idaho only.

Table 3.2.2-5. Male[1] Sage-grouse Fixed Kernel Use Areas (95%) by Season for the Project Area, Haul Routes, and Total (acres).

	Spring	Summer	Fall	Winter
Project Area	28,645	31,718	25,748	2,703
Northern Inbound Haul Route	1,001	577	225	144
SHR[2] Option 1	461	594	600	247
SHR Option 2	579	715	721	348
Outbound Haul Route	1,184	577	225	144
Total Acres Available[3]	307,760	471,777	254,509	70,193

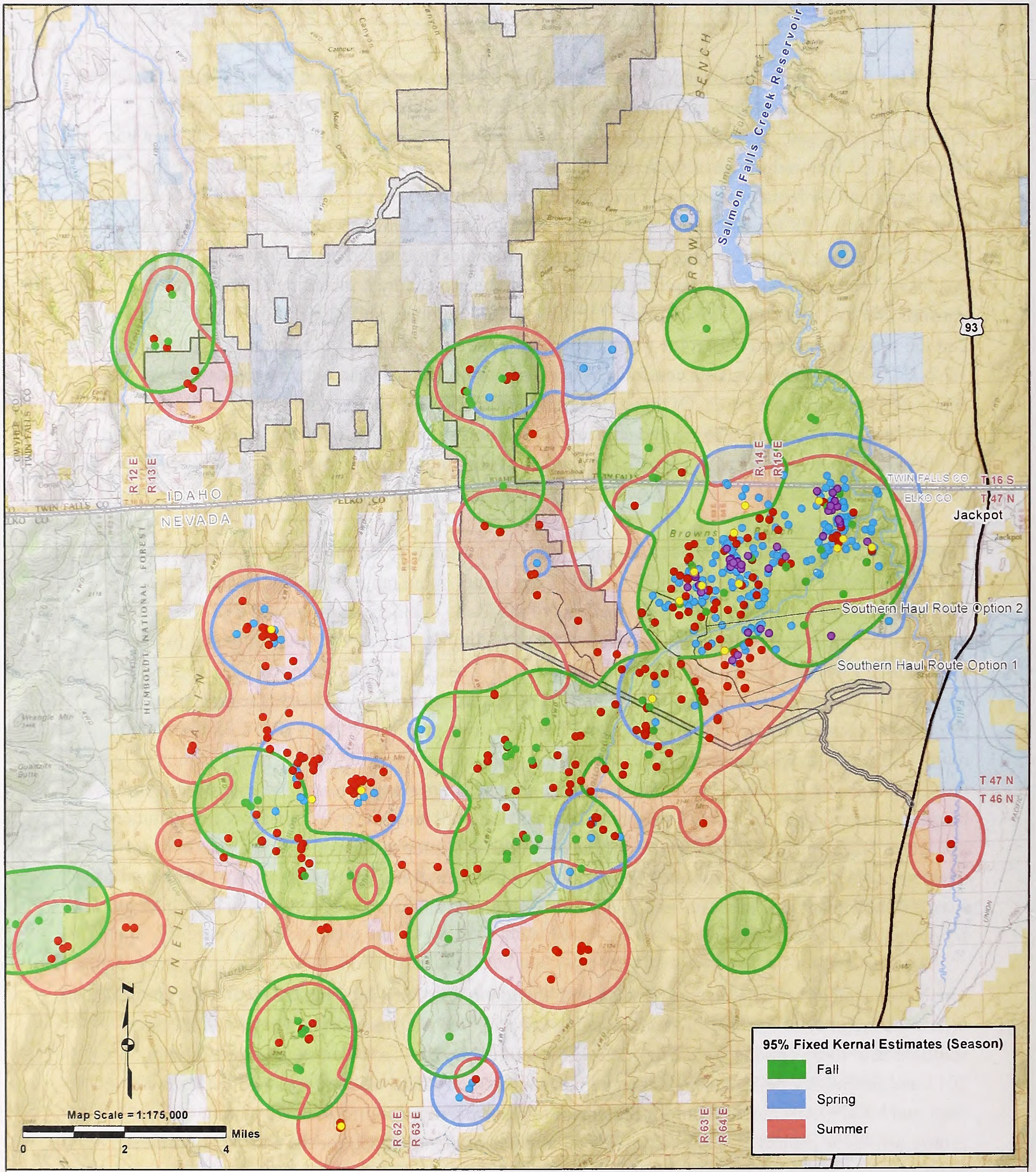
[1] Acres of male sage-grouse habitat are not additive to that of females since there is overlap between the two sexes.
[2] SHR = Southern Inbound Haul Route
[3] Value incorporates all of the area within the 95 percent fixed kernel use area. Kernel estimates are based on telemetry data from sage-grouse captured in Idaho only.

To collect additional data on sage-grouse movements in the project area, IDFG radio-marked sage-grouse in the Browns Bench area between 2008 and 2009 (Connelly et al., 2009). Sage-grouse movements reported in Connelly et al. (2009) were consistent with the longer-term spring, summer, and winter findings from the Idaho kernel use area data. There were some differences seen for female fall use of the project area. Movement data indicated that sage-grouse movements into and across the project area varied seasonally, with the greatest use occurring in summer and least in the winter. Although spring male sage-grouse movements were associated with lek locations, males commonly moved through the project area. Female sage-grouse used the project area less than males during the spring, and most movements were associated with lek, nest, and early brood-rearing areas. Both males and females used, and moved through, the project area during the summer. Males made numerous fall movements in a northeast and southwest orientation, with many passing through the project area, whereas female sage-grouse showed little use of the project area during the fall, with most use occurring on Browns Bench. During the winter, there was little use of the project area by males or females, with most use concentrated to the east on Browns Bench.

WEST Inc. began monitoring sage-grouse via telemetry in the Nevada portion of the project area in March 2010 to determine seasonal use patterns, population parameters, and movement patterns (LeBeau, Young, and Hallingstad, 2010). Forty-nine sage-grouse were captured on Browns Bench in Nevada, fitted with radio transmitters, and their locations tracked were tracked by radiotelemetry. Nine males and 24 females were fitted with VHF (very high frequency) transmitters and 16 females were fitted with GPS transmitters. The study is ongoing, with preliminary results through November 15, 2010 from the 38 surviving birds (7 males and 31 females) presented here (Figures 3.2.2-16 and 3.2.2-17). Twenty nests were located in the vicinity of the project area, including one along the transmission line route, one along option 1 of the southern inbound haul route, and four along option 2 of the southern inbound haul route (with one of these the same as that along option 1; Figure 3.2.2-16). Nine of these nests successfully hatched one or more eggs. The others were unsuccessful due to destruction by predators. Of these successful nests, four broods successful fledged chicks. Brood-rearing was observed along and adjacent to the transmission line route and both options of the southern haul route as well as in areas to the southwest and in the privately-owned western-most portion of the project area.

Telemetry data collected on the Nevada sage-grouse from March 15 through November 15 with the VHF transmitters was assessed with 95 percent fixed kernel home range estimators using the same seasonal time periods used by IDFG for analysis of the Idaho telemetry sage-grouse data. Seasonal use areas for males and females estimated from these preliminary data (VHF transmitters only) are presented in Figures 3.2.2-16 and 3.2.2-17, respectively. These figures indicate that sage-grouse captured in Nevada are using the southern portion of the project area, particularly the area around the proposed transmission line, and the area surrounding the two proposed layouts of the southern haul route. Use was heavy in Browns Bench, around the point of capture. Preliminary interpretation of these data indicate that both male and female sage-grouse are moving in a southwest direction from breeding areas to summer and fall seasonal use areas. Late fall and winter locations are not included in Figures 3.2.2-16 and 3.2.2-17 as the data has not been collected at this time. A full year of telemetry data would be incorporated in the Final Environmental Impact Statement. An assessment of seasonal movements for this data set has not been completed and would be included in the Final Environmental Impact Statement.

The Nevada telemetry data, in combination with the Idaho telemetry data, indicate that sage-grouse utilize the majority of the project area, including the proposed transmission line route and the two southern haul route options. Telemetry data will continue to be collected on sage-grouse throughout 2011 and potentially beyond. The Idaho and Nevada telemetry data will be combined between the draft and Final Environmental Impact Statement to present a more comprehensive picture of sage-grouse use of the project area and to provide a more consistent approach for the analysis of project impacts.



LEGEND

Project Area Boundary

Female Sage-grouse Telemetry Locations (Season)

- Fall (September 1 – November 30)
- Summer (June 1 – August 31)
- Spring (March 1 – May 31)
- Point of Capture (Spring only)
- Nest Site

Land Status (Ownership)

BLM | Private | State | USFS

Seasonal polygons based on preliminary data and only partially represent the spring and fall seasons. 95% fixed kernal home range estimators were computed using Hawth's Analysis tool in ArcMap.

Figure 3.2.2-16. Female Sage-grouse Kernal Estimates & Telemetry Locations for Nevada (2010)

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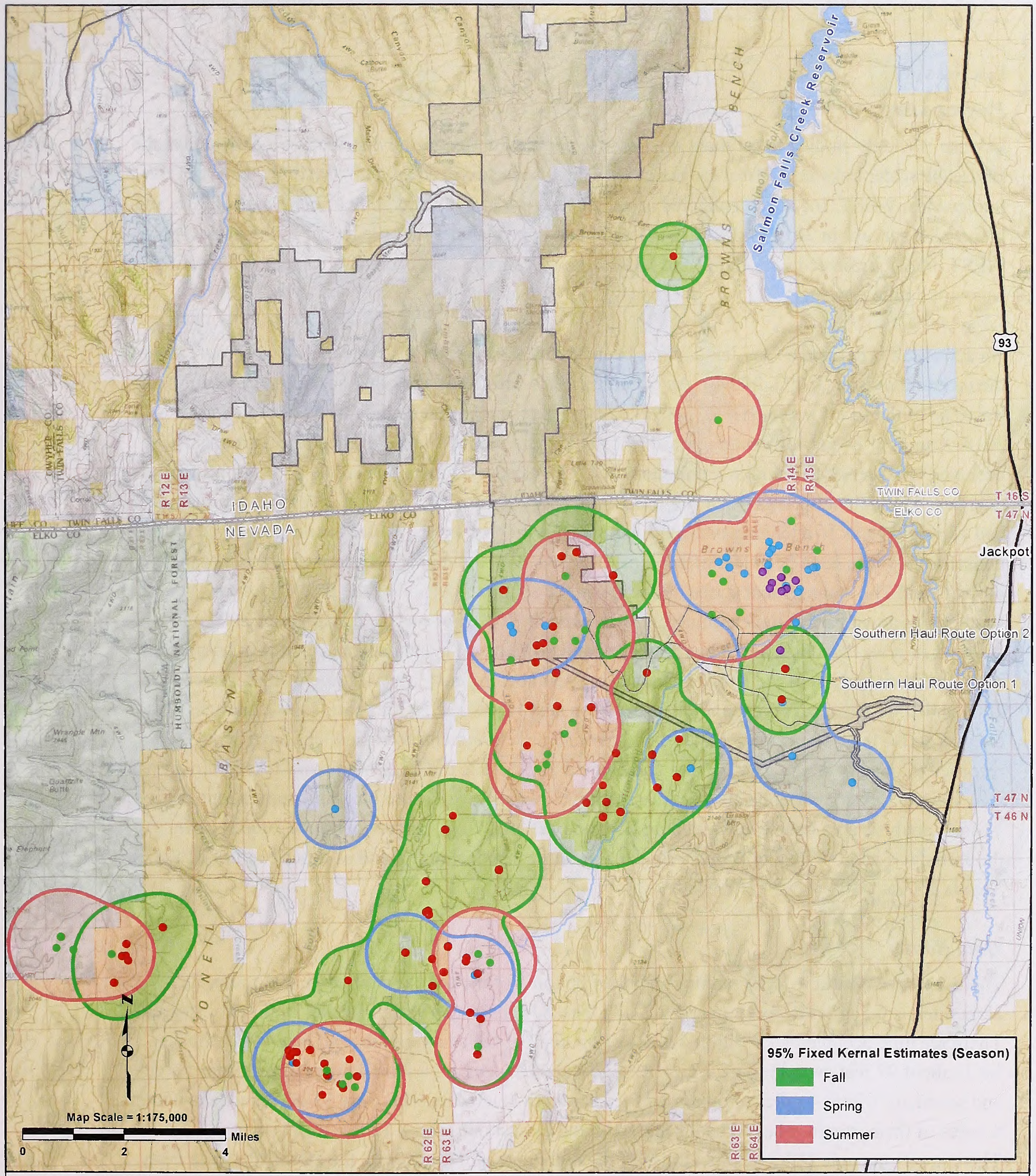

LEGEND

Project Area Boundary

Male Sage-grouse Telemetry Locations (Season)

- Fall (September 1 – November 30)
- Summer (June 1 – August 31)
- Spring (March 1 – May 31)
- Point of Capture (Spring only)

Land Status (Ownership)

BLM | Private | State | USFS

Seasonal polygons based on preliminary data and only partially represent the spring and fall seasons. 95% fixed kernal home range estimators were computed using Hawth's Analysis tool in ArcMap.

Figure 3.2.2-17. Male Sage-grouse Kernal Estimates & Telemetry Locations for Nevada (2010)

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Lek Surveys

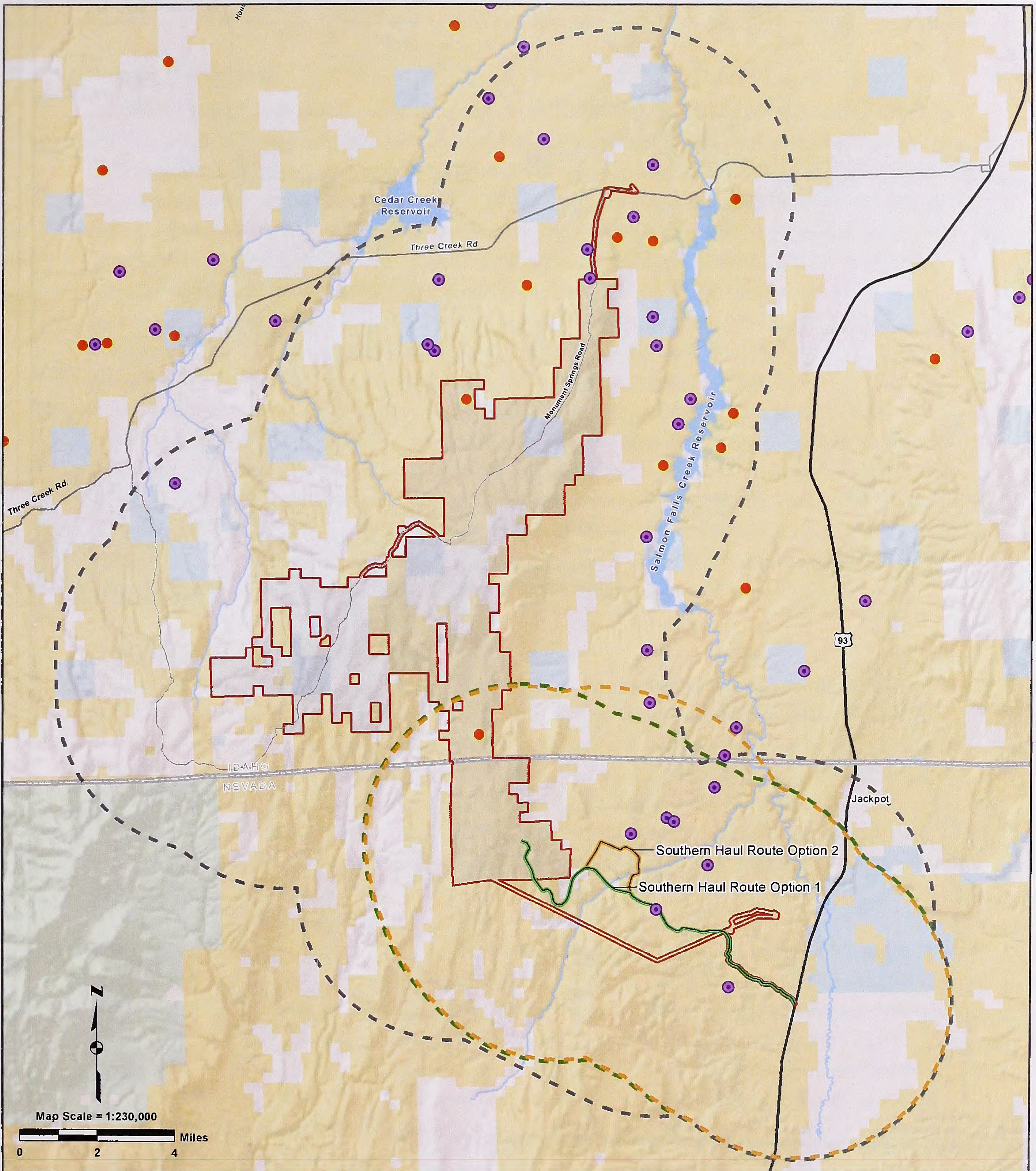
Project Area

Lek use is widely studied to estimate sage-grouse population trends and distribution locally and at the landscape scale. Leks in the Browns Bench area have been surveyed annually by IDFG and NDOW for decades. WEST, Inc. also conducted aerial lek surveys in 2008 and 2009 (Young et al., 2009) and ground lek surveys in 2010 (WEST, 2010) within an approximately 2-mile buffer of the project area. WEST, Inc. coordinated with IDFG and NDOW so that survey efforts on a given year and location were not duplicated.

An active lek is defined as any lek that has been attended by greater than one male sage-grouse during the breeding season (IDFG, 2009a). An occupied lek is defined as a lek that has been active during at least one of the past 5 years (IDFG, 2009a). Occupied leks reported include those occupied as of 2010. A total of 24 occupied sage-grouse leks are located within 4 miles of the project area. No occupied leks are located within the project area. The closest occupied lek is just north of the project area near Monument Springs Road (Figure 3.2.2-18). Occupied leks within 4 miles of the project area had between 0 and 36 attending males present when last observed in 2010. Several unoccupied or undetermined leks have been identified in past surveys with the majority occurring outside of the project area. The management status of one lek in the southern portion of the ROW boundary near the southern laydown yard is undetermined; it was active in 2000, not surveyed again until 2007 and 2008 when it was inactive, and it has not been surveyed since. The management status of another lek in the northern portion of the ROW boundary is also undetermined; it was active in 1992, inactive in 2000 and 2007 when surveyed, and it has not been surveyed since. Within the 11-mile analysis area, over 70 active leks, 10 unoccupied leks, and over 35 undetermined/unverified leks have been recorded (Connelly et al., 2009). It should be noted that despite the large number of leks in the project area vicinity, lek counts since 2004 indicate that the overall sage-grouse breeding populations in the 11-mile analysis area have been declining (Connelly et al., 2009). Lek counts since 2006 specific to the Jarbidge Field Office and Browns Bench also show this declining trend as described in Population Trends above.

Haul Routes

There are seven occupied leks within 4 miles of option 1 of the southern inbound haul route; the closest lek is 0.5 miles away (Figure 3.2.2-18). These leks are also within 4 miles of the project area. There are nine occupied leks within 4 miles of option 2 of the southern inbound haul route; the closest lek is about 97 feet away (Figure 3.2.2-18). Eight of these leks are within 4 miles of the project area and seven are within 4 miles of option 1 of the southern haul route. There are 33 occupied leks within 4 miles of the northern inbound haul route, with the closest only about 11 feet away (Figure 3.2.2-19). There are 21 occupied leks within 4 miles of the outbound haul route, with the closest 0.3 mile away (Figure 3.2.2-19). Twelve of the same leks within 4 miles of the northern inbound and outbound haul routes are also within 4 miles of the project area.



LEGEND

Project Area Boundary

Occupied Sage-grouse Lek (2006-2010) Undetermined Sage-grouse Lek (2006-2010)

4-mile buffer of Project Area

4-mile buffer of Southern Haul Route Option 1

4-mile buffer of Southern Haul Route Option 2

Land Status (Ownership)

BLM Private State USFS

Figure 3.2.2-18. Sage-grouse Leks in the Project Area Vicinity

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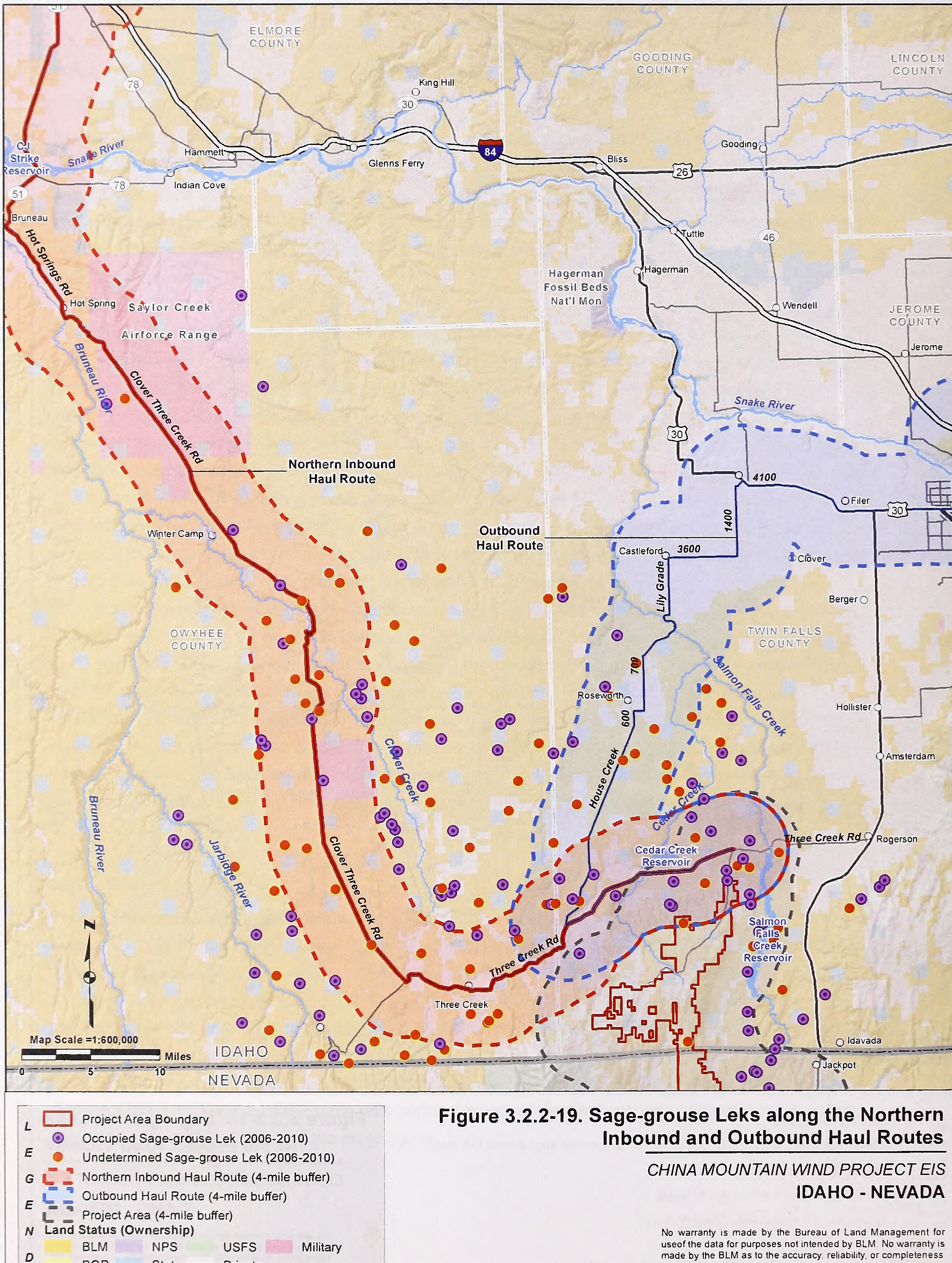

Figure 3.2.2-19. Sage-grouse Leks along the Northern Inbound and Outbound Haul Routes

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Winter Use Surveys

Six winter sage-grouse surveys were conducted by WEST, Inc. via helicopter from January 2008 to January 2009, with two surveys each conducted during the winter months of December, January, and February. The objective of the winter sage-grouse surveys was to determine the winter distribution of sage-grouse in the project area (Young et al., 2009). The survey area included the ROW preference area and previously identified transmission line corridors (different than those identified in the Proposed Action and alternatives) and a two mile buffer of these areas. During the six winter sage-grouse flights, 102 separate sage-grouse observations totaling 1,389 individuals were made. Sage-grouse groups ranged from 1 to 67 individuals in size, with a mean of 13.6 birds per group. Thirteen observations were made within the project area, primarily during December (Young et al., 2009), for a total of 145 individuals (range 5 to 22, mean 11.2 birds per group). The majority of the wintering birds observed were located outside of the project area on Browns Bench on each side of the Idaho/Nevada border, with a smaller cluster of individuals observed just west of the northern portion of Salmon Falls Creek Reservoir in Idaho. Note that the survey area did not include the majority of the transmission line route outside of the ROW preference area or the southern haul route options, thus additional wintering birds in the Nevada portion of the project area could be expected. Results of these surveys were consistent with those reported in Connelly et al. (2009) where sage-grouse concentrated movements immediately to the east of the project area on Browns Bench.

<u>Columbian Sharp-tailed Grouse</u>

Year-round habitat for Columbia sharp-tailed grouse occurs throughout sagebrush-steppe and intermountain mixed shrub-grass communities (Nevada Department of Wildlife [NDOW], 2010a). Nesting and brood-rearing habitats contain shrubs, grasses, and forbs while winter habitats consist of deciduous riparian shrubs and trees (NDOW, 2010a). Winter migration depends on snow levels, but birds may migrate to higher elevations than their breeding habitats if woody riparian cover is available (NDOW, 2010a). Within the project area, the majority of the use by sharp-tailed grouse would be during the winter in the mountain brush or woodland vegetation community (approximately 6,000 acres).

In recent years, sharp-tailed grouse have been reintroduced into the House Creek and Shoshone Basin areas near the Idaho/Nevada border and into the Snake Mountains in Elko County, Nevada (IDFG, 2010a). IDFG telemetry data indicates that Columbian sharp-tailed grouse use suitable habitats within an area that encompasses approximately 993,000 acres, including the entire project area (IDFG, 2010c). A total of seven leks are considered occupied by IDFG, four of which were identified as being active during 2009 surveys. One active lek was identified in the House Creek area and three active leks were documented in the Shoshone Basin (IDFG, 2010a).

To aid in the analysis of impacts in Chapter 4, occupied sharp-tailed grouse leks within 4 miles of the project area and haul routes are described. No occupied leks are within 4 miles of the project area. One occupied lek is within 4 miles of both the northern inbound haul route and outbound haul route. A second occupied lek is within 4 miles of the outbound haul route. The southern inbound haul route options are not within 4 miles of occupied sharp-tailed grouse leks.

Raptors

Six species of BLM sensitive raptors were observed during spring and fall raptor migration surveys, raptor nest surveys, and year-round fixed-point bird surveys in 2008. Five of the species were observed during raptor migration surveys (Table 3.2.2-6). Of these, the golden eagle was the most abundant species, and was the only species observed during all seasons. A northern goshawk was observed in the fall of 2008 during fixed-point bird use surveys. A bald eagle observation (a seventh species) was made during a project corridor survey conducted in 2009.

Table 3.2.2-6. Total Number of Groups and Individual Sensitive Raptors Observed During Raptor Migration Surveys in the Project Area in 2008.

Species	Spring		Fall	
	# Groups	# Individuals	# Groups	# Individuals
Ferruginous hawk	1	1	0	0
Swainson's hawk	4	5	0	0
Golden eagle	38	45	46	53
Prairie falcon	3	3	0	0
Peregrine falcon	0	0	1	1

Source: Young et al., 2009

Golden eagles are found throughout southwest Idaho and are one of only two species of eagles native to North America (Farmer, Goodrich, Inzunza, & Smith, 2007). Golden eagles breed in shrubland, grassland, farmland, and open forests. They build large stick nests usually on a cliff, dominant mature tree, embankment, manmade structure, and rarely on the ground (Farmer et al., 2007). The North American golden eagle represents 47 percent of the global population and a recent survey estimated the population of the northwestern U.S. at approximately 27,400 (Good, Nielson, Sawyer, & McDonald, 2004). Data from raptor migration counts and Christmas Bird Counts indicate that the population of golden eagles has declined in western North America since the 1980s, with rapid declines from 1995 to 2005 (Farmer et al., 2007). In the Goshute Mountains in Elko County, Nevada, the rate of decline is among the highest in the west (-8.6% per year, $P<0.01$) (Farmer et al., 2007).

The number of observations of golden eagles within the project area likely represents multiple observations of resident nesting pairs and not necessarily migrating individuals, as most individuals below the 55th parallel are not migratory (Kochert, Steenhoff, McIntyre, & Craig, 2002). To aid in the analysis of impacts presented in Chapter 4, the number of golden eagle nests within 1 mile and 6 miles of the project area and haul routes is presented.

Five active golden eagle nests were documented within 6 miles of the project area during surveys in 2008 and 2010 (Young et al., 2009; LeBeau and Young, 2010), of which two nests are within 1 mile. Within 6 miles of the northern inbound haul route there is one active golden eagle nest that is also within 6 miles of the project area. No golden eagle nests are known to occur within 1 mile of the northern inbound haul route. Two active golden eagle nests are within 6 miles of the southern haul route options, both nests are also within 6 miles of the project area. One of these two nests is less than 1 mile to the east of the southern inbound haul route option 2.

Counts of the other sensitive raptor species during the 2008 and 2010 surveys were low (less than five individuals), with the majority of observations occurring in the spring and summer. The exception is for the northern goshawk, where only one bird was observed during the fall. Although prairie falcons are rare in the project area, one active nest is present within 1 mile of the area and another is present 1.1 miles east of option 2 of the southern haul route.

Approximately 25,000 acres of shrubland and grassland communities within the project area provide foraging opportunities for several raptor species including prairie falcons, golden eagles, Swainson's hawks, and ferruginous hawks. All haul routes contain adjacent shrublands and grasslands and provide some perching opportunities (existing transmission line poles and/or fences, etc.) for raptors and therefore are expected to have foraging habitat within and adjacent to the roads.

Nesting habitat is available for ferruginous hawks in the project area as they are known to nest in shrubs, on cliffs, utility poles, trees, and on the ground. Potential nest sites for Swainson's hawks are limited within the project area to patches of mahogany and aspen. Potential nesting sites for Swainson's hawk and ferruginous hawk occur along all the haul routes where suitable habitat exists. Nests of both species have been identified within 1 mile of the northern inbound haul route (IFWIS, 2010). Several ferruginous hawks are also known to nest within 1 mile of the outbound haul route (IFWIS, 2010).

Nesting habitat for prairie falcons and peregrine falcons is available in cliff areas that can be found in the breaks vegetation group on the eastern side of the project area. However, more likely nesting habitat for peregrine falcons would be near Cedar Creek Reservoir and Salmon Falls Creek Reservoir, to the north and east of the project area, respectively, due to the larger prey base present in these water bodies. Nesting habitat for prairie falcon and peregrine falcon along the northern inbound haul route is limited to cliff areas that can be found in the Clover Creek canyon and Bruneau River canyon. Habitat can also be found along the southern inbound haul route options within the Cottonwood Creek canyon, and along the outbound haul route at Lilly Grade within the Salmon Falls Creek canyon. A prairie falcon nest is known within 1 mile of the northern inbound haul route within Clover Creek canyon (IFWIS, 2010).

Nesting habitat for northern goshawk is limited to small patches (< 20 acres) within the project area. These areas are much smaller than the typical nesting area preferred by goshawks; however, goshawks do occasionally utilize small aspen patches within Great Basin shrub-steppe communities (Squires & Reynolds, 1997). A goshawk was identified during surveys, and previous observations have been made within the project area west of Twin Buttes in Black Canyon and approximately 0.5 miles outside the project area in the upper Cedar Creek drainage (IFWIS, 2010). Predicted habitat within the Jarbidge Field Office is rare (IDVMD, 2009) but goshawks could potentially nest within the small aspen component of the mountain brush or woodland vegetation group in the project area and southern haul route vicinity. Northern goshawks are not expected to occur along the northern inbound haul routes or outbound haul routes as these areas are outside of the predicted distribution of this species (IDVMD, 2009).

Bald eagles were not observed during raptor migration surveys within the project area, but one incidental observation occurred during special status species corridor surveys conducted between June and July in 2009 (Young et al., 2009). Nesting habitat for bald eagles is not present in the project area due to the lack of large trees. Foraging habitat is limited primarily to the Salmon Falls Creek Reservoir to the east of the project area; however, perching opportunities are lacking. Use within the project area during other seasons would likely be incidental and tied to migration. Nesting habitat does occur along the northern inbound haul route in the Bruneau River valley and both adult and immature birds have been identified perching in trees within 1 mile (IFWIS, 2010).

Surveys for owls have not been conducted in the project area. Potential nesting habitat for western burrowing owls is present in the sagebrush communities of the project area and haul routes, and active nest burrows have been identified in the project area (Young et al., 2009) as well as within 1 mile of the northern inbound haul route and outbound haul route (IFWIS, 2010). Habitat for flammulated owls is limited to small patches of aspen in the project area. Short-eared owls typically nest on the ground and likely occur within the project area and along all haul routes in shrub and grassland habitats.

Passerines and Other Birds

Three species of BLM sensitive passerines were observed in the project area during year-round fixed-point bird surveys and breeding bird surveys in 2008: Brewer's sparrow, vesper sparrow (*Pooecetes gramineus*), and olive-sided flycatcher (*Contopus cooperi*) (Table 3.2.2-7; Young et al., 2009). Habitats for the two sparrow species is abundant within the project area and haul routes, occurring in shrublands and grasslands. Habitat for the olive-sided flycatcher is limited to mountain brush and woodland habitats within the project area and within Cottonwood Creek canyon near the southern inbound haul route options.

Table 3.2.2-7. Total Number of Individuals and Groups of Sensitive Passerine and Other Birds Observed During Fixed-point Surveys and Breeding Bird Surveys in the Project Area in 2008.

Species	Fixed-point				Breeding Bird
	Spring (4/1-6/15)	Summer (6/16-8/15)	Fall (8/16-10/31)	Winter (11/1-3/31)	June 12-29
Brewer's sparrow	68	185	69	0	237
Vesper sparrow	80	113	17	0	132
Olive-sided flycatcher	1	0	1	0	1
Lewis's woodpecker	5	0	0	0	5
Red-naped sapsucker	4	3	1	0	3

Source: Young et al., 2009

Two sensitive woodpecker species, family Picidae, were identified within the project area: Lewis woodpecker (*Melanerpes lewis*) and red-naped sapsucker (*Sphyrapicus nuchalis*) (Table 3.2.2-7;

Young et al., 2009). These woodpeckers are unlikely to be found along any of the haul routes. Appendix 3E contains more detailed description of habitat associations for these species.

Loggerhead shrikes were observed near the project area in 2008 (Young et al., 2009), and could occur in the project area and haul routes where sagebrush or juniper is present. The potential for occurrence and habitat requirements for other BLM sensitive passerines is depicted in Appendix 3E.

Of the six birds described above, only the Lewis' woodpecker was identified flying at a height that would be considered within the zone of rotation of the wind turbine blades. General flight height characteristics for passerines and other birds are described in Section 3.2.2.2.

Bats

Bat species potentially residing or flying through the project area and haul routes include long-distance migratory, foliage roosting species, and resident species. In general, the resident bats roost in rock crevices in cliffs and forage for insects over open water or over vegetation. They make regional seasonal movements between summer roost sites and winter hibernacula. Rock cliffs and outcrops are scattered throughout the project area and provide potential roost habitat for a variety of non-migratory bat species. Sagebrush communities, aspen, and slow-moving water also provide habitat for some of these species. In general, bats are active between April and November and hibernate during the cold winter months.

Acoustic bat surveys were conducted to estimate the seasonal and spatial use of the project area by bats (Young et al., 2009). Bats were surveyed with ground Anabat detectors at 18 locations in the ROW preference area between May 29 and October 30, 2008, a period corresponding to summer use and fall migration for bat species expected in the area. Bat calls were recorded as high-frequency calls (>35 kilohertz) that are generally given by small bats and low-frequency calls (<35 kilohertz) that are generally given by larger bats. The total number of bat passes per detector night was used as an index of bat use in the project area.

The majority (92%) of the bat passes recorded were from the smaller, high-frequency bats. These species are typically non-migratory. Species identification of two low-frequency migratory bats was also made, the hoary bat and Brazilian free-tailed bat. Detections of the low-frequency bats were more common from late June to mid-July. Bat activity was very high at one location in the northern portion of the project area near an unnamed spring, with an average of 155 bat passes per detector night. Activity at this location accounted for 29 percent of all bat passes recorded. Three additional stations scattered throughout the project area had high level of activity, with average number of passes ranging from 39 to 42 per detector night. Moderate bat activity (10-30 passes per detector night) was recorded at five stations and low bat activity was recorded at the remaining nine stations, with less than five bat passes per detector night. Bat activity was relatively high from July 12 through the end of August, and then decreased to lower levels through September and October (Young et al., 2009).

Additional bat acoustic surveys were conducted at two paired locations between July 16 and October 29, 2009 to compare spatial use of bats in the project area. For this study, one detector was positioned on the ground and the other paired detector was placed 164 feet above ground near the rotor swept area. Results indicated higher use near the ground detectors than the raised detectors. The majority (86%) of the bat passes recorded were from the smaller, high-frequency bats, as observed during the 2008 surveys. No discernable difference between number of high-frequency verses low-frequency bat species were observed between ground and raised detectors. Overall, bat activity at elevated sampling stations was very low (less than one per night on average). Based on the activity levels seen at ground and raised heights and the predominantly low vegetation in the project area, it is expected that most bat activity at the site is concentrated at or near vegetation levels (Young et al., 2010).

Mist-netting surveys were conducted in July 2010 in the project area and immediate vicinity (less than 0.5 miles from the project area) to supplement the acoustic surveys. Sensitive bat species captured during mist-netting surveys include little brown bat (*Myotis lucifugus*), long-legged myotis (*Myotis volans*), western small-footed myotis (*Myotis ciliolabrum*) (smaller bats with high-frequency calls), western long-eared myotis (*Myotis evotis*), big brown bat (*Eptesicus fuscus*), Townsend's big-eared bat (*Plecotus townsendii*), and silver-haired bat (*Lasionycteris noctivagans*) (larger bats with low-frequency calls). The most common species captured were the western long-eared, little brown, and long-legged bats. The silver-haired bat was the only long-distance migrant captured. A few hoary bats (*Lasiurus cinereus*), another long-distance migrant, were also observed during these surveys, but not captured. Other sensitive species potentially present in the project area and along the southern haul route options include the spotted bat (*Euderma maculatum*), western pipistrelle (*Pipistrellus hesperus*), fringed myotis (*Myotis thysanodes*), Yuma myotis (*Myotis yumanensis*), and California myotis (*Myotis californicus*), although the distribution of the latter two species is on the edge of or just outside the project area. Bat species known to occur within 1 mile of the northern inbound haul route and/or the outbound haul route include the Townsend's big-eared bat, big brown bat, spotted bat, California myotis, small-footed myotis, little brown myotis, and the western pipistrelle bat (Appendix 3E).

Radio-transmitters were placed on eight bats of four different species captured during mist-netting surveys. Tracking of these bats revealed seven different roost sites in or adjacent to (within approximately 1 mile) the project area. Three roost sites were of western long-eared bats, one of big brown bats, two of long-legged bats, and one of little brown bats. Roosts were located within the crevices of rock formations and cliffs. Some were also associated with small ponds. One of the roost sites of the long-legged myotis corresponded to the high use area detected near the unnamed spring during the acoustic surveys, further indicating the importance of the northern portion of the project area to bats (WEST, 2010.)

<u>Small Mammals</u>

Five BLM sensitive small mammal species could potentially utilize the project area: pygmy rabbit, Piute ground squirrel (*Spermophilus mollis artemesiae*), Wyoming ground squirrel (*Spermophilus*

elegans nevadensis), Pahranagat Valley montane vole (Pahranagat Valley montane vole), and Preble's shrew (*Sorex preblei*).

Pygmy rabbits occur in the Great Basin and adjoining intermountain regions, including the states of Idaho, Nevada, Oregon, Wyoming, Montana, Utah, and California. Populations are widely scattered across the landscape in association with tall, dense sagebrush aggregations with deep, loose soils of alluvial origin that allow burrowing (IDFG, 2005a). The project area and haul routes are within the predicted distribution of the pygmy rabbit (IDVMD, 2009). Suitable habitat within the known distribution could include areas dominated by mountain and Wyoming big sagebrush with loamy soils that are deep and loose enough to support burrow systems. Surveys for pygmy rabbits along all project feature corridors and the southern haul route options were conducted in 2009 and 2010. One individual and two potential pygmy rabbit burrows were observed in the project area (Young et al., 2009). Recent surveys have identified pygmy rabbit within close proximity to both the northern inbound haul route and the outbound haul route (IFWIS, 2010). Potential habitat also exists along the southern inbound haul route options.

The Piute ground squirrel and Wyoming ground squirrel were observed in the project area during the 2009 and 2010 surveys. These species could occur along all haul routes within suitable habitat (shrublands and grasslands, excluding annual grasslands).

Suitable habitat for the Pahranagat Valley montane vole could occur within RHCAs. This montane vole is only known to occur within Nevada (50 CFR 58982); therefore, suitable habitat is only considered to be potentially occupied within the southern portion of the project area and southern haul route options.

Preble's shrew habitat requirements are not well known, but presence has been documented in arid and semiarid shrublands, grasslands, and riparian areas (NatureServe, 2010). Considering the range of habitat types where Preble's shrew is found, suitable habitat could occur throughout the project area and haul routes.

Acres of sensitive small mammal habitat were calculated for the entire project area and within a 250-foot buffer of the haul routes (Table 3.2.2-8). See Appendix 3E for further descriptions of habitat associations for sensitive small mammal species.

Table 3.2.2-8. Acres of Sensitive Small Mammal Habitat within the Project Area and Haul Routes.

	Pygmy Rabbit	Piute and Wyoming Ground Squirrels	Pahranagat Valley Montane Vole	Preble's Shrew
Project Area	8,510	24,760	1,770	31,990
Northern Inbound Haul Route	610	5,410	150	5,820
Southern Inbound Haul Route Option 1	120	750	105	750
Southern Inbound Haul Route Option 2	120	840	100	850

Reptiles

The short-horned lizard is likely the most widely distributed lizard within the Jarbidge Field Office (BLM, 2007a) and is considered a Nevada BLM sensitive species. Habitat occurs where loose rocky soil and sagebrush cover is present. Some evidence suggests that short-horned lizards prefer grazed to ungrazed vegetation in Idaho (Reynolds, 1979), thus this species may utilize suitable portions of the project area where grazing occurs. Acres of potential habitat for this species were calculated for the entire project area and within a 250-foot buffer of the haul routes (Table 3.2.2-9). No additional sensitive reptile species are expected to occur in the project area or haul routes.

Table 3.2.2-9. Acres of Short-horned Lizard Habitat within the Project Area and Haul Routes.

Project Area	24,760
Northern Inbound Haul Route	5,410
Southern Inbound Haul Route Option 1	750
Southern Inbound Haul Route Option 2	840

Amphibians

Amphibians require a source of water at some point throughout their life cycle and typically use areas adjacent to these water sources for a majority of their activities. To estimate potential habitat for amphibians, RHCAs are used because they include a water body and a defined amount of adjacent riparian and upland habitat as described in Section 3.1.4. Acres of potential habitat for amphibians were calculated for the entire project area and within a 250-foot buffer of the haul routes (Table 3.2.2-10). Two sensitive amphibian species, Columbian spotted frog and northern leopard frog, have the potential to occur in the project area or along the haul routes. These species are described below.

Table 3.2.2-10. Acres of Amphibian Habitat within the Project Area and Haul Routes.

Project Area[1]	1,766
Northern Inbound Haul Route[2]	148
Southern Inbound Haul Route Option 1[1]	104
Southern Inbound Haul Route Option 2[1]	102
Outbound Haul Route[2]	39

[1] Potential habitat for Columbia spotted frog.
[2] Potential habitat for northern leopard frog.

Columbia Spotted Frog

The Columbia spotted frog is a candidate species for listing under the ESA and is a BLM Type 1 sensitive species. In Idaho, it occurs in the mid-elevations of the Owyhee uplands and in southern Twin Falls County (USFWS, 2010c). Studies indicate that spotted frogs in southwest Idaho are declining (Patla & Keinanth, 2005). Within the Jarbidge Field Office they are considered uncommon (BLM, 2007a). They inhabit a wide variety of vegetation communities, including forested areas, grasslands, and riparian areas in sagebrush habitats (Patla & Keinanth, 2005). In southwestern Idaho, adult spotted frogs are associated with palustrine, shrub-scrub, seasonally flooded areas, or with intermittent riverine, streambed, seasonally flooded areas (Munger et al., 1998).

BLM has identified Columbia spotted frogs in the project area and vicinity. Historically, Columbia spotted frogs were reported in Shack Creek, Bear Creek, Rocky Canyon, and Timber Canyon (North Fork Salmon Falls Creek) drainages in relatively close proximity (BLM, 2010). However, the failure of beaver dams in Shack Creek, Bear Creek, and Timber Canyon has reduced suitable habitat for Columbia spotted frogs in these drainages (BLM, 2010). Recent surveys identified Columbia spotted frogs in Rocky Canyon (BLM, 2007a), and their numbers have been increasing within that drainage since 1998 (BLM, 2010).

Potential habitat exists in RHCAs within the project area and the southern haul route options. The northern inbound haul route and outbound haul route are not within the predicted distribution of the Columbia spotted frog (IDVMD, 2009).

Northern Leopard Frog

The northern leopard frog is a widespread species that has experienced significant declines across most of its range, while remaining abundant in some areas (Smith & Keinath, 2007). Northern leopard frogs require a range of habitats in relatively close proximity to one another. These habitats can be categorized into three major types: winter habitat (overwintering in lakes, streams, and ponds), summer habitat (feeding by adults in upland areas), and tadpole habitat (up to 3 months spent as tadpoles in shallow breeding ponds; Smith & Keinath, 2007).

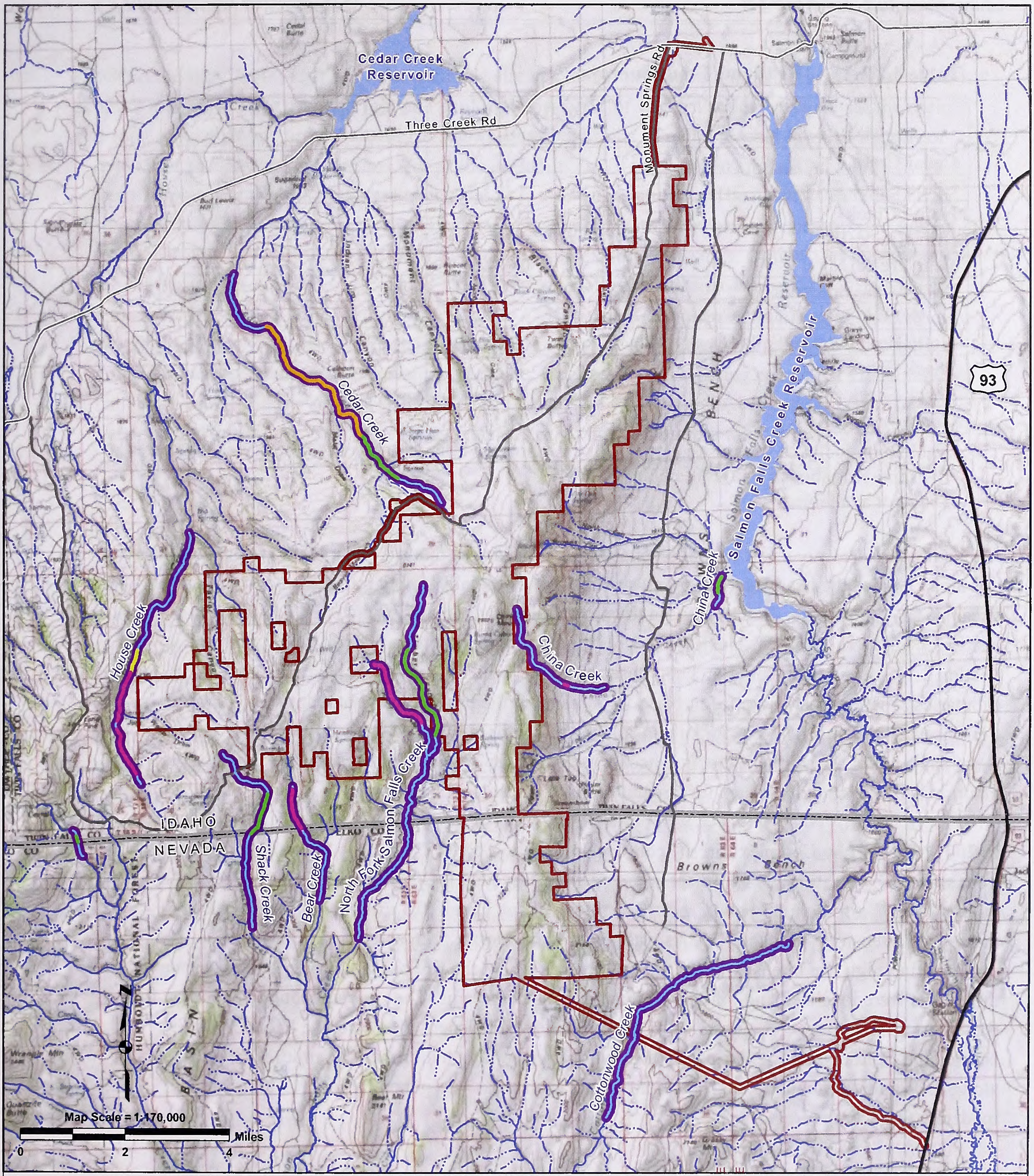
Surveys for amphibians were conducted in the Jarbidge Field Office in 2006 (Motychak & Barrett, 2006; BLM, 2007a), including Salmon Falls Creek. No occurrences of northern leopard frogs were

recorded during these surveys. Predicted habitat does not occur within the project area or southern inbound haul route options, but does occur along the northern inbound haul route and outbound haul route (IDVMD, 2009).

Redband Trout

Redband trout is a term used to describe the fine-scaled rainbow trout indigenous to waters east of the Cascade Mountain range (Currens, Schreck, & Li, 2009). However, evidence exists that these populations are distinct subspecies and are important management units for conservation (Currens et al., 2009). Redband trout are found in a range of stream habitats including desert areas in southwestern Idaho and northeastern Nevada in the Columbia River Basin. They prefer cool streams with temperatures less than 21 C (<70 F); however, they can survive daily cyclic temperatures up to 27 C (80 F) for a short period of time (IDFG, 2005b). Spawning depends on temperature and location, but typically takes place between May and June (Muhlfled, 2002).

Redband trout are present in Salmon Falls Creek and several of its tributaries that drain the Jarbidge Foothills. Many of the streams containing redband trout run dry before reaching their confluence with other tributaries, resulting in populations that are locally isolated at certain times of the year (BLM, 2007a). Redband trout have been located in Cottonwood Creek, Shack Creek, North Fork Salmon Falls Creek, Upper Cedar Creek, and Salmon Falls Creek (IDFG, 2005b). Surveys for redband trout conducted in the Jarbidge Field Office in 2006 also recorded this trout species in Shack Creek, North Fork Salmon Falls Creek, and Cedar Creek as well as in Rocky Canyon Creek, Bear Creek, House Creek, and China Creek (BLM, 2007b). These streams are located within or fed from tributaries in the project area. Cottonwood Creek is also crossed by the two southern haul route options. Results from these surveys are depicted in Table 3.2.2-11. Surveys conducted in the Wells Field Office in 2006 and 2010 also indicate the presence of redband trout in Bear Creek, North Fork Salmon Falls Creek, Shack Creek, and Cottonwood Creek, but information on number of redband trout observed and miles surveyed is only available for Cottonwood Creek (Table 3.2.2-11; Figure 3.2.2-20; BLM, 2006; NDOW, 2010c). Data reported in Table 3.2.2-11 for Bear Creek, North Fork Salmon Falls Creek, and Shack Creek in Nevada are from 1980 surveys. Redband trout are assumed present in Clover Creek near the bridge along the northern inbound haul route, where Lilly Grade crosses lower Salmon Falls Creek along the outbound haul route, and in Salmon Falls Creek below the dam. This assumption is based on known presence of redband trout in the upper reaches of these streams; the streams are identified in Figure 3.1.4-5.



LEGEND

Project Area Boundary

Redband Trout Occupied Streams

Stream Type

Ephemeral — Intermittent — Perennial

Habitat Condition Ratings/ Restoration Priority

1/High — 2/Moderate — 3/Low — 4/Conservation

Figure 3.2.2-20. Habitat Condition Ratings Assessed Streams that have Redband Trout

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Table 3.2.2-11. Redband Trout Surveys.

Stream Name[1]	Total Number of Redband Trout	Total Miles Surveyed	Individuals/ Mile
Cedar Creek	4,032	5.1	796
China Creek (Upper)	39	0.1	361
House Creek	NA[2]	2.5	NA[2]
Bear Creek (ID)	220	0.6	369
Bear Creek (NV)	NA[2]	NA[2]	722
Rocky Canyon Creek	598	1.2	494
North Fork Salmon Falls Creek (ID)	5	1.4	3
North Fork Salmon Falls Creek (NV)	NA[2]	NA[2]	379
Shack Creek (ID)	41	0.5	86
Shack Creek (NV)	NA[2]	NA[2]	625
Cottonwood Creek	4,661	3.7	1,250

[1] Table only includes streams that occur in or originate within or adjacent to the project area or the southern inbound haul route options.
[2] Data not available (NA).

Although there are only a few stream reaches in the project area that are occupied by redband trout, this area contains the headwaters of many streams that eventually empty into redband trout-bearing streams. To quantify this, RHCAs within the project area and along the haul routes, as defined in Section 3.1.4, were assessed. The RHCA acres reported in this section differ for those reported in Section 3.1.4 because they only include those associated with redband trout-bearing streams and tributaries. There are 737 acres of RHCAs for streams in the project area that empty into redband trout-bearing streams; 68 acres for streams along the southern inbound haul route option 1, 78 acres for streams along the southern inbound haul route option 2; 77 acres for streams along the northern inbound haul route; and 38 acres for streams along the outbound haul route.

In 2007, the Murphy Complex Fires (Scott Creek Fire) burned RHCAs along four of the redband trout streams originating in the project area that were surveyed in 2006: Rocky Canyon Creek (1.2 miles), North Forth Salmon Falls Creek (2.2 miles), Shack Creek (0.1 mile), and Bear Creek (0.8 mile). Fire intensity within the RHCAs was generally moderate (125 acres), with few areas experiencing high fire intensity (3 acres). In the areas where the fire burned through the riparian area, the effects were localized and limited to short sections of streams. The riparian woody vegetation for these burned stream reaches consisted of mature willow and aspen. Likewise, the Scott Creek Fire crossed the Cottonwood Creek riparian area along the southern haul route (0.8 mile). Fire intensity along the southern inbound haul route options' riparian areas was generally low (17 acres) to moderate (14 acres).

In addition to natural disturbances to trout-bearing streams, anthropogenic disturbances to fish-bearing streams, primarily roads and also livestock grazing, exist in the project area and along the haul routes. There are 5 miles of roads within the RHCAs for redband trout occupied streams within the project area. There is 1 mile of road within the RHCAs for redband trout occupied streams along the northern inbound haul route and 1 mile along the outbound haul route. There are 2 miles of roads

within the RHCAs for redband trout occupied streams along the southern inbound haul route option 1, and 2 miles along the southern inbound haul route option 2, of which 1 mile overlaps with the option 1 route. In the project area, there are 36 existing road crossings of redband trout-bearing streams or tributaries to trout-bearing streams. All of the crossings are of intermittent streams, of which five are trout-bearing and the remainder are tributaries to trout-bearing streams. The northern inbound haul route crosses Clover Creek (a perennial redband trout-bearing stream) one time and crosses seven non trout-bearing tributaries to this creek, for a total of eight existing crossings. Option 1 of the southern inbound haul route crosses Cottonwood Creek (a perennial, redband trout-bearing stream) one time and crosses seven non trout-bearing tributaries to Cottonwood Creek, for a total of eight existing crossings. Option 2 of the southern haul route crosses Cottonwood Creek one time and crosses nine non trout-bearing tributaries to Cottonwood Creek, for a total of ten existing crossings. The outbound haul route crosses lower Salmon Falls Creek (a perennial redband trout-bearing stream) at Lilly Grade one time and crosses two non trout-bearing tributaries to this creek, for a total of three existing crossings. Three Creek Road, the primary way to access the project area, also crosses Salmon Falls Creek at the dam.

Habitat Condition Ratings

Habitat Condition Ratings are used by the Jarbidge Field Office to describe conservation and restoration priorities for streams occupied by special status fish. Several streams within and adjacent to the project area were surveyed for redband trout and associated habitat condition (Figure 3.2.2-20; BLM, 2006). Habitat Condition Ratings were based on instream and riparian habitat indicators combined with an evaluation of restoration feasibility, the extent of the habitat, and relative fish abundance (BLM, 2010). Surveyed stream reaches in the project area and vicinity were classified as either conservation reaches or restoration reaches and restoration priority ranged from high quality to low quality (Table 3.2.2-12). Reaches within China Creek were rated as moderate and low priority for restoration. Upper tributaries to North Fork Salmon Falls Creek (Timber and Rocky Canyon), were assessed as low and moderate priorities for restoration. Shack Creek is low priority while upper reaches of House Creek are moderate priority with a lower reach being high priority for restoration. Cedar Creek has the best fish habitat of any assessed stream in the project area, with most surveyed reaches rated for conservation. PFC assessed streams are addressed in Section 3.1.4.1.

Table 3.2.2-12. Habitat Condition Rating Assessed Streams within and near the Project Area and Haul Routes that have Redband Trout[1].

Stream Name[2]	HCR / Restoration Priority[3]	Reach Mileage	Indicators in a Degraded Condition
Bear Creek Reach 1	2/Moderate	0.4	Pool Volume
Bear Creek Reach 2	2/Moderate	0.4	Pool Volume
Cedar Creek Reach 1	4/Conservation	0.2	None
Cedar Creek Reach 2	3/Low	0.3	Bank Stability
Cedar Creek Reach 3	4/Conservation	1.0	None
Cedar Creek Reach 3	4/Conservation	0.1	None
Cedar Creek Reach 4	4/Conservation	0.7	None
Cedar Creek Reach 4	4/Conservation	0.5	None
Cedar Creek Reach 5	4/Conservation	0.8	None
Cedar Creek Reach 5	4/Conservation	0.2	None
Cedar Creek Reach 6	4/Conservation	0.0	None
Cedar Creek Reach 6	4/Conservation	1.4	None
Cedar Creek Reach 6	4/Conservation	0.3	None
Cedar Creek Reach 6	4/Conservation	0.4	None
Cedar Creek Reach 7	3/Low	0.4	Pool Volume
Cedar Creek Reach 7	3/Low	0.5	Pool Volume
Cedar Creek Reach 7*	3/Low	0.2	Pool Volume
Chimney Creek Reach 1	3/Low	0.1	Pool Volume, Quality
China Creek Upper Reach 1	2/Moderate	0.1	Pool Volume, Quality
China Creek Lower Reach 1	3/Low	0.3	Substrate
House Creek Lower Reach 1	1/High	0.5	None
House Creek Lower Reach 2	2/Moderate	0.5	Pool Volume
House Creek Lower Reach 3	2/Moderate	0.5	Pool Volume
House Creek Upper Reach 1	2/Moderate	0.2	Pool Volume
House Creek Upper Reach 2	2/Moderate	0.2	Pool Volume, Quality
House Creek Upper Reach 3	2/Moderate	0.4	Pool Volume
House Creek Upper Reach 4	2/Moderate	0.3	Bank Stability, Substrate
Rocky Canyon Creek Reach 1	2/Moderate	0.8	Substrate
Rocky Canyon Creek Reach 2	2/Moderate	0.3	Substrate, Pool Quality
Rocky Canyon Creek Reach 3	2/Moderate	0.5	Pool Volume
Shack Creek Reach 1	3/Low	0.2	Pool Volume
Shack Creek Reach 2*	3/Low	0.2	Pool Quality
Shack Creek Reach 2	3/Low	0.4	Pool Volume
Timber Canyon Reach 1	3/Low	0.8	Bank Stability
Timber Canyon Reach 2*	3/Low	0.1	Bank Stability
Timber Canyon Reach 2	3/Low	1.1	Bank Stability

[1] Note that the perennial streams Cottonwood Creek, Clover Creek, and Salmon Falls Creek were not assessed for Habitat Condition Ratings (HCR).

[2] All stream reaches assessed were perennial with the exception of the three noted with asterisks. Timber Canyon is located at the headwaters of North Fork Salmon Falls Creek.

[3] Reaches with a restoration priority of low, moderate, or high are classified as restoration reaches; those with a 'conservation' rating are classified as conservation reaches.

Source: BLM, 2006; BLM, 2010

3.2.2.4 Big Game

Big game species are hunted by humans as a source of food and/or for sport. The three most abundant big game mammal species within or near the project area are mule deer (*Odocoileus hemionus*), Rocky Mountain elk (*Cervus elaphus*), and American pronghorn (*Antilocapra americana*).

The existing conditions for big game are described within areas identified by IDFG and NDOW biologists as the year-round range for big game species that utilize the project area at some time (IDFG, 2010d; IDFG, 2010e; IDFG, 2010f). Seasonal use areas (i.e., summer, spring, and winter) are described where data are available. Areas used would vary by species, and it should be noted that big game herds utilizing the project area and haul routes are interstate herds whose management may differ between states.

Mule Deer

Mule deer occupy nearly all habitats in the Intermountain West from dry, open country to dense forests. They prefer rocky, brushy areas, open meadows, open pine forests, and burns (Brown, 1992). Mule deer can also be found in shrub-steppe and grasslands with shrubs. Mule deer are primarily browsers, with a majority of their diet coming from forbs and leaves and twigs of woody shrubs (Cox et al., 2009).

Fires have destroyed large portions of mule deer winter ranges in the region, and reseeding efforts along with invasive plant species do not provide adequate browsing opportunities during winter months (IDFG, 2009b). While winter forage is a key component in survival, several other habitat factors influence mule deer populations. Quality summer and fall habitat are needed for mule deer to enter the winter with sufficient fat reserves (IDFG, 2009b). Mule deer rely on these reserves, along with minimal energy expenditure and access to some forage plants, to survive the winter months. Spring habitat is important, as most winter-related mortality occurs in early spring (IDFG, 2009b). Quality and quantity of nutritious forage during this period is crucial for fawns, as winter mortality is high within this age-class (IDFG, 2009b).

Population trend data for mule deer within the project area are not available; however, inferences can be made from general trends of the larger management units in Idaho and Nevada that encompass the project area. IDFG monitors mule deer populations using analysis areas comprised of several game management units. The Idaho portion of the project area is within Unit 47. Mule deer within the project area would be considered part of Analysis Area 12 (Units 40, 41, 42, 46, and 47). While Analysis Area 12 has traditionally supported substantial deer herds, an area-wide decline in deer population in the 1970s has resulted in conservative hunting seasons (IDFG, 2009b). Hunter harvest has averaged 1,489 animals per year from 2000 to 2007 (IDFG, 2009b), with little variation. Mule deer were common (1,239 individuals observed in 139 groups) within the survey area covered during sensitive species surveys of the present area in 2008 and 2009 (Young et al., 2009).

Nevada monitors its mule deer populations as unit groups. The unit group that covers the project area is comprised of Hunt Units 071 through 079 and 091. The Nevada portion of the project area is in

Hunt Unit 074. Recruitment rates have been below average in this unit group over the last several years and are likely the result of large fires that destroyed quality summer and transitional habitats (NDOW, 2010b).

Mule deer that utilize the project area have ranges that encompass approximately 1 million acres in Idaho and Nevada (IDFG, 2010d). This range includes portions of all haul routes. Approximately half of this total area is considered some type of winter habitat by IDFG and NDOW (Figure 3.2.2-21).

Rocky Mountain Elk

Elk use a variety of habitats, depending on the season and their location. They can be found from sagebrush-dominated deserts to dense cedar forests (IDFG, 2009c). They use grass-shrublands for feeding and tall shrubs or pole timber for resting in the spring; they feed in clearcuts and shrub fields and rest in pole timber in the summer; and remain in mesic pole timber in the autumn (Streubel, 2000). Throughout the northern Rocky Mountains, elk move to lower elevations during the winter months to escape the deep snow and gain access to food sources. They exhibit a high fidelity to their home range, but have been known to abandon it if they are excessively disturbed (Streubel, 2000).

Elk were common (1,137 individuals observed in 44 groups) within the survey area covered during sensitive species surveys of the project area in 2008 and 2009 (Young et al., 2009). Elk herds of the Jarbidge Mountains in Nevada will often winter in Idaho (NDOW, 2010b).

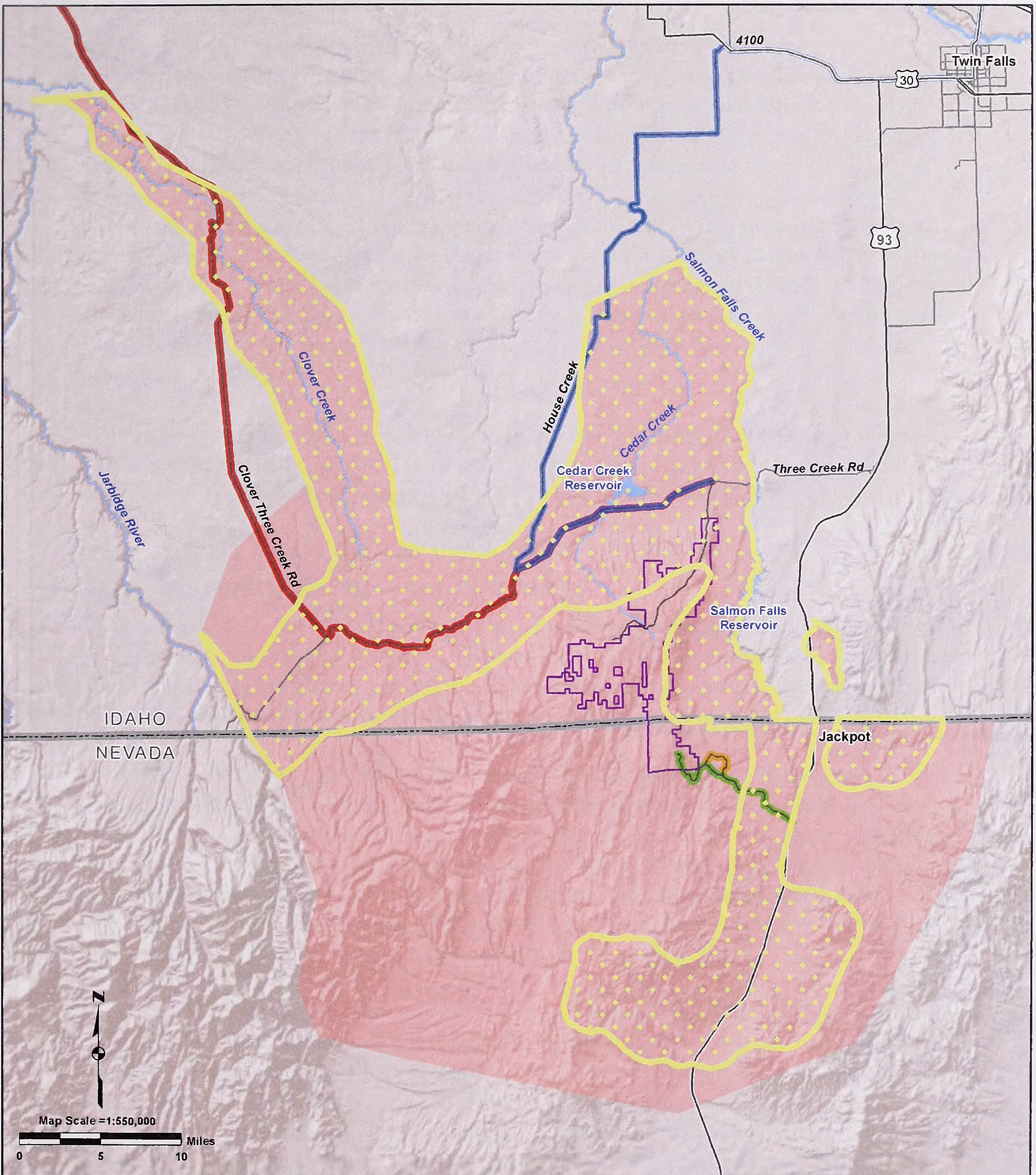
IDFG manages elk within game management units 47 as part of a larger management zone known as the South Hills Zone. This zone contains game management units 46, 47, 54, 55, and 57. Historically, elk numbers in the area have been low and elk sightings were considered uncommon, with management focusing on quality mule deer hunting (IDFG, 2009c). Although reliable estimates of elk numbers are currently unavailable, the population in the South Hills Zone is exceeding the 1998 objective and habitat conditions are suitable for supporting a much larger herd (IDFG, 2009c).

NDOW combines Hunt Units 72 and 74 into the Jarbidge Mountains unit group for management purposes. This elk herd is expanding in both population and range, due mostly to the effects of recent wildfires, which promote the expansion of grass and aspen communities (NDOW, 2010b).

Elk that utilize the project area have ranges that encompass approximately 516,000 acres in Idaho and Nevada (Figure 3.2.2-22; IDFG, 2010e). Seasonal use within this area has not been delineated by IDFG and NDOW, and therefore is not discussed.

American Pronghorn

In sagebrush-steppe habitats, pronghorn diets consist of sagebrush and other shrubs during all seasons, but particularly in the fall and winter (O'Gara & Yoakum, 2004). Forbs are preferred by pronghorn when available (O'Gara & Yoakum, 2004). Pronghorn were the most common big game species (1,882 individuals observed in 119 groups) within the survey area covered during sensitive species surveys of the project area in 2008 and 2009 (Young et al., 2009).



LEGEND

Mule Deer Use Area

Winter Habitat
Year-round Habitat
Highway
Major Road
Right-of-Way Preference Area
Northern Inbound Haul Route
Outbound Haul Route
Southern Inbound Haul Route (Option #1)
Southern Inbound Haul Route (Option #2)

Figure 3.2.2-21. Mule Deer Use Area

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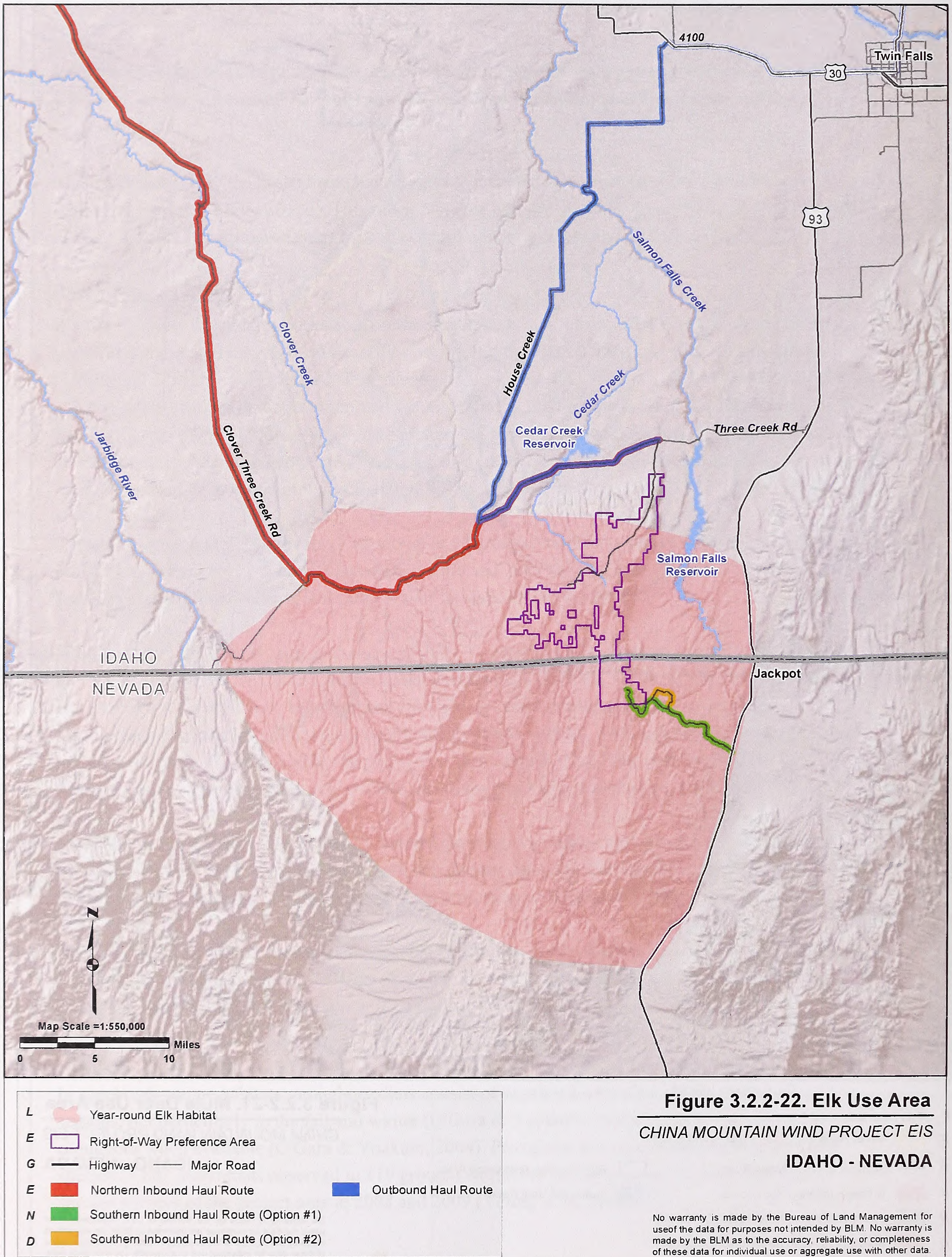

Figure 3.2.2-22. Elk Use Area

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Pronghorn are managed in Idaho by groups. Group 2 contains game management units 45, 46, 47, 49, 52, 52A, and 53. This group has seen recent fluctuations in population, and local variation exists among herds (IDFG, 2009d). Recent fires have destroyed significant portions of sagebrush-steppe habitat in the region and have likely hindered the recovery of pronghorn in Group 2.

In Nevada, the population within Hunt Unit 74 is managed as a larger unit group including Hunt Units 72 and 75. The population for this hunt unit group is stable (NDOW, 2010b). Recent wildfires and a lack of precipitation have resulted in below average fawn recruitment (NDOW, 2010b). The long-term effects of fire to pronghorn may be positive, as perennial grasses colonize recently burned areas; however, the short-term effects are a loss of winter habitat resulting in poor winter range conditions (NDOW, 2010b).

Pronghorn that utilize the project area have ranges that encompass approximately 639,000 acres in Idaho and Nevada (IDFG, 2010f). This range includes portions of all haul routes. Approximately half of this total area is considered some type of winter habitat by IDFG and NDOW (Figure 3.2.2-23).

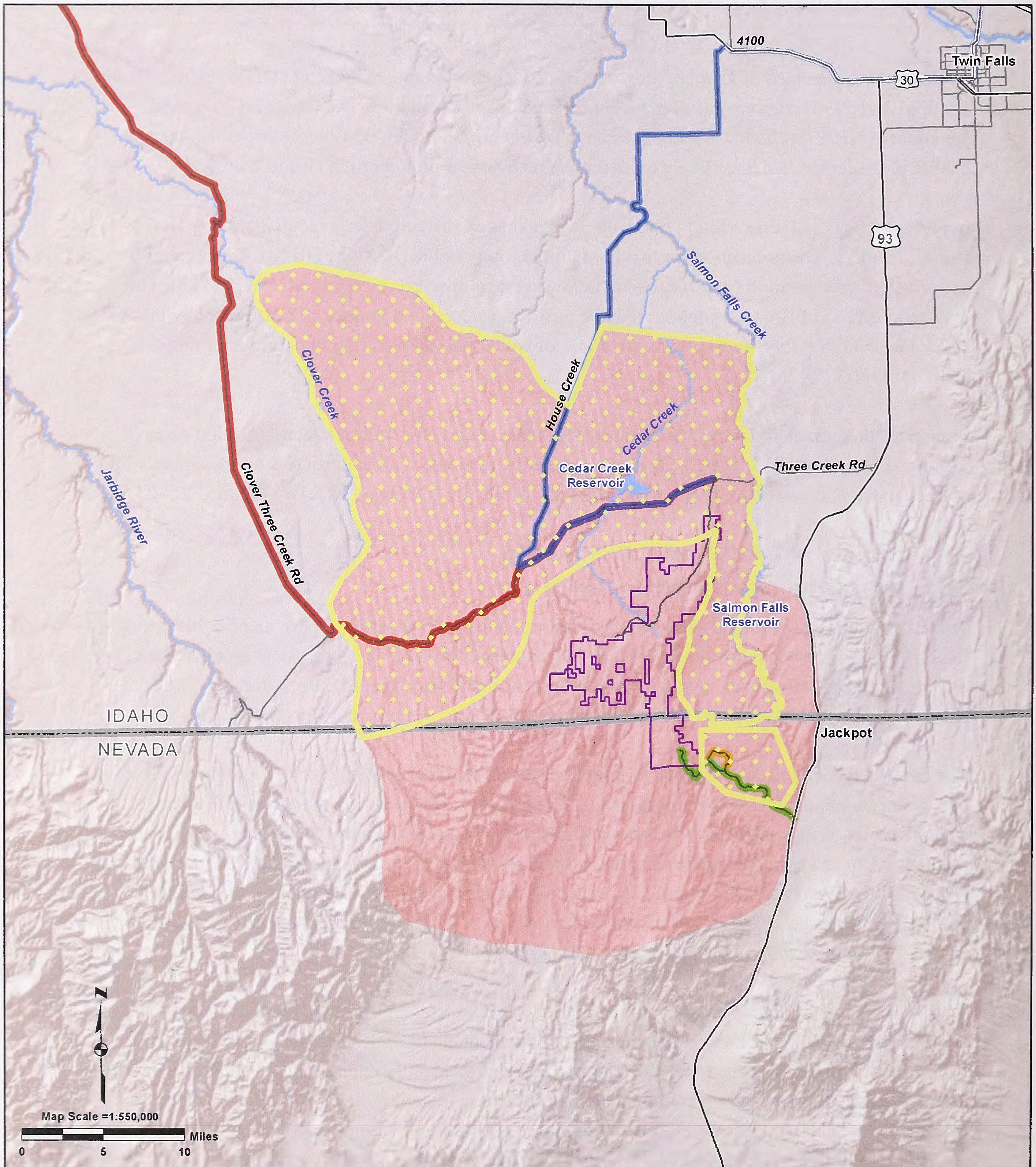
3.3 SOCIAL AND ECONOMIC RESOURCES

3.3.1 HISTORIC AND CULTURAL RESOURCES

Cultural resources are defined as locations of human activity, occupation, or use identifiable through field inventory, historical documentation, or oral evidence. These include archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and may include places of traditional cultural or religious importance to Native American Tribes (BLM, 2004).

The BLM is the lead Federal agency for the purposes of compliance with the NEPA and with Section 106 of the National Historic Preservation Act. Because the undertaking has the potential to affect cultural resources, the project must include an assessment of possible impacts. The project is designed to meet the intent of various Federal and state laws and regulations. Primary among these are the *National Historic Preservation Act* (PL 89-665), as amended; the *American Indian Religious Freedom Act* (PL 95-341); the *Archaeological Resources Protection Act* of 1979 (PL 96-95); and the *Native American Graves Protection and Repatriation Act* (PL 101-601).

To date, a Class I literature review and a partial Class III archaeological inventory have been completed to assist in the Environmental Impact Statement analysis. A Class III cultural resources inventory of remaining project areas would be conducted to identify additional archaeological sites and to provide the BLM with recommendations concerning the eligibility of identified sites for inclusion on the National Register of Historic Places. The Class I cultural resources analysis area included a one-mile buffer around the Right-of-Way preference area and all linear features (the project area). Class III inventories focused on a survey of 500-foot-wide corridors that encompassed all project features (250 feet on each side). To date 49 percent of the survey corridors have surveyed.



LEGEND

Pronghorn Use Area

Winter Habitat | Year-round Habitat

Highway | Major Road | Right-of-Way Preference Area

Northern Inbound Haul Route | Outbound Haul Route

Southern Inbound Haul Route (Option #1)

Southern Inbound Haul Route (Option #2)

Figure 3.2.2-23. Pronghorn Use Area

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3.3.1.1 Natural and Cultural Setting

The project area lies within a transition zone between the Columbia Intermontane province (Columbia Plateau) to the north and the Basin and Range physiographic province to the south (Ross & Forrester, 1958). Some authors include this area in the Snake River Plain (Alt & Hyndman, 1989:311), while others classify it as part of the Owyhee Uplands (Bowers & Savage 1962:4) or foothills of the Owyhee Plateau (Link, 2002). Low rainfall and extreme seasonal temperatures characterize the local climate. Hydrologically, the project area falls within the Columbia River drainage system, with all streams ultimately draining into Salmon Falls Creek, a tributary of the Snake River.

Native vegetation in this region reflects the relatively arid climate and is characterized by upland and riparian communities of the Great Basin floristic zone (Grayson, 1993:21-33). Upland communities, predominantly sagebrush-steppe, dominate the project area and vicinity. Details on these vegetation communities are discussed in Section 3.2.1.

Native wildlife in the project area is discussed in Section 3.2.2. At present, big game species that occur within or near the project area include: mule deer, Rocky Mountain elk, and American pronghorn. Bison, grizzly bear, and grey wolf likely inhabited the project area prior to and shortly after the period of historic contact (ca. 1805-1830). As described below, the introduction of equestrian hunting in the early 1800s led to the extinction of bison within southern Idaho by 1840. Euroamerican settlement of southern Idaho and northern Nevada led to the persecution and extirpation of the grizzly bear, while wolf depredation on livestock played a significant role in the local extinction of the wolf. Smaller faunal resources include but are not limited to coyote, badger, skunk, fox, jackrabbits, cottontail, grouse, quail, golden eagles, and trout. Many of these natural resources were and are of importance to Native American inhabitants of the region. The great diversity of resources provided food, medicine, materials for clothing and shelter, and minerals for manufacturing tools and weapons.

3.3.1.2 Prehistory

The project area falls within the cultural Great Basin, a region that extends beyond the physiographic Great Basin to include portions of the Columbia Plateau and Rocky Mountains. This vast area encompasses six distinct archaeological subareas that have been defined based on artifact inventories and variable adaptations to the local environment (Cressman, 1943; Jennings, 1964, 1986). Cultural overviews presented for this province typically discuss settlement and subsistence, technology, and cultural interaction of indigenous groups during the Holocene era, often providing considerable insight into the continuity and variability in the archaeological record. Drawing on Butler's (1986) synthesis of the prehistory of the Snake and Salmon River area, three general periods of prehistoric adaptation may be defined for the project area.

The Early Big Game Hunting period (12500-5800 B.C.) centered on the pursuit of big game animals that became extinct during the terminal phase of the Late Pleistocene or in the early Holocene. Chief among these were elephants (*Mammuthus* sp.) and certain bison species (*B. Antiquus)*. Other hunted prey, such as camel (*Camelops* sp.), horse (*Equus* sp.), mountain sheep (*Ovis* sp.), elk (*Cervus* sp.), and deer (*Odocoileus* sp.), did not reach extinction. Prior to 10,000 B.C., southern Idaho was

characterized by a cooler, moist environment than that of today, while after 10,000 B.C., climatic warming culminated in the establishment of modern environmental conditions (Franzen et al., 1981). Archaeological evidence indicates that Paleo-indian people of this period were highly mobile, and engaged in a food economy driven by the availability of big game that ranged widely across the landscape (Simms, 2008:133). Archaeological evidence for the Paleo-Indian period in Idaho is most clearly associated with hunting weaponry, namely the distinctive spear points. Based on point types, the Paleo-Indian period can be divided into three subperiods: Clovis, Folsom, and Plano.

The Archaic period (5800 B.C. – A. D. 500) may be divided into two subperiods, including the Early and Middle Archaic. During the Archaic, inhabitants near the project area depended on big game as a principal food resource (Butler, 1986; Ranere, 1972; Swanson, 1972). Although subsistence and settlement patterns maintained continuity throughout these periods, some variability has been observed between high and low elevation sites (Swanson, 1974). A relatively synchronous shift towards stemmed and notched projectile point style also took place at this time. Palynological and geomorphological evidence indicate that climatic conditions during the Early and Middle Late Archaic were markedly warmer and drier than now (Davis et al., 1986; Dort, 1968; Swanson, 1972). One key change noted in local material culture during the Middle Archaic was the possible early introduction of the bow and arrow at about 1000 B.C. (Franzen et al., 1981). Franzen and others (1981:225) speculated that Fremont ceramics and agricultural traits extend into the southern Idaho area at an early date; however, these traits remain poorly dated.

The Late period (A.D. 500-1805) is better represented in the archaeological record than the two earlier periods. This period of adaptation is known for the introduction of ceramics among the historically known Shoshonean speakers, as well as small Desert Side-notched projectile points. While hunter-gatherer settlements and subsistence strategies continued, an increased number of sites suggests that population density enlarged at this time (Franzen et al., 1981:225). At least two distinctive sets of cultural manifestations have been identified, including the Northern Fremont (a Formative stage culture) and the Shoshonean (an Archaic stage culture). The Fremont inhabited areas in what is now Utah and parts of Idaho, Colorado, and Nevada from A.D. 700 to 1300. They lived a transhumant lifestyle that revolved largely around hunting, gathering, and horticulture. Other unifying characteristics included the manufacture of relatively expedient gray ware pottery and a signature style of basketry and rock art. The earliest archaeological evidence of the Shoshone in eastern Idaho is the material culture remains comprising the Lemhi phase in Birch Creek Valley, which dates from the Early Historic period, ca. A.D. 1805-1840. Clear evidence of Shoshonean occupation of Northwestern Nevada has been revealed at sites such as Bronco Charlie Cave, Itsy Cave, and Deer Creek Cave.

3.3.1.3 History

European colonization of the New World quickly affected the original inhabitants near the project area. By the late seventeenth century, Shoshone peoples acquired the horse from the Spanish settlements of the Southwest and soon spread beyond the Rocky Mountains into present Montana as far as Canada in search of the now more accessible bison herds that roamed the west (Murphy &

Murphy, 1986:300). Not long after the introduction of the horse, the Blackfeet to the north, acquired firearms from British traders and trappers. Soon mounted as well, by the mid-eighteenth century, the Blackfeet pushed the Shoshone back from the Plains to their approximate area at the time of European contact (Murphy & Murphy, 1986:302). Together with the eventual push of Euroamerican settlers from the east, the arrival of the horse and gun caused turmoil in the Plains and adjoining regions as newly mounted populations fought for horses and hunting territories. Dislocation became even more severe as the region was penetrated by fur trappers and traders in the early nineteenth century (Murphy & Murphy, 1986:302).

The arrival of Euroamericans to the intermountain west brought about rapid changes to traditional American Indian cultures. First contact is generally attributed to the Lewis and Clark and the 1804-1806 Corps of Discovery, an expedition which precipitated an era of rapid Euro-American exploration and settlement. Within a decade, British and American fur trading posts were established throughout the Pacific Northwest. One of the earliest in the region, Fort Hall, near present day Pocatello, was located at the intersection of Indian trails from all directions that would later become emigrant routes (Figure 3.3.1-1; Brown, 1932:153). The fort functioned as a center of trade, where Indians could barter for Euroamerican goods (Franzen, 1981:137). A rapid decimation of the beaver population led the trappers to gradually leave the Snake River country once the area no longer produced significant quantities of fur (Beal & Wells, 1959[1]:195). In addition, bison within southern Idaho had become extinct by 1840 (Frémont, 1887), likely a result of the introduction of equestrian hunting by ca. 1800 (Arkush, 2002:83). By 1840, the fur-trapping era ended and the stage was set for the great overland migration for immigrant settlement of the west (Dicken & Dicken, 1979).

The principal route of migration across southern Idaho was the Oregon Trail, which traces its origins to the trails forged by the earlier explorers and fur trappers. The Oregon Trail is located approximately 30 miles northeast of the project area (Figure 3.3.1-1). The wave of migration was preceded by a handful of American Protestant missionaries, who traveled to the Oregon Territory to establish missions among the Native American peoples of the region in the mid-1830s. By the mid-1840s, the “floodgates of emigration” had opened. Fort Hall became an important stop along the Oregon Trail, as it was located approximately two-thirds of the way from Independence, Missouri to Oregon City. The effects of the Oregon Trail on Native Americans in the region was considerable in terms of use of natural resources, primarily forage and firewood fuel, by the emigrants. An estimated 240,000 emigrants with 1.5 million animals traveled through the territory during the great migration (Madsen, 1980:27). With an increased pressure on regional resources, hostilities between Native Americans and new emigrants increased dramatically. Traditional Shoshone wintering grounds were settled, game became scarce, and unrestricted grazing took its toll on plants that provided important subsistence resources.

LEGEND

- Project Area
- Oregon Trail Route
- California Trail Route
- Toana Freight Wagon Road in Idaho
- Approximate Location of Toana Freight Wagon Road in Nevada

Figure 3.3.1-1. Historical Influences in Southern Idaho

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Emigrants headed for California could leave the Oregon Trail near present day Burley, Idaho and head south on the California Trail. The California Trail route, originally traveled in 1841 by the Bidwell-Bartleson party, became better traveled by the mid-1840s. By the year 1849, more emigrants traveled to California than to Oregon. From the Raft River in Idaho, the California Trail headed southwest past the City of Rocks and onto Goose Creek near the present Idaho-Utah border. The trail then continued southwest across the present northwest corner of Utah, entering Nevada near the confluence of Goose Creek and Hardesty Creek, just 3 miles south of Idaho (Figure 3.3.1-1). The trail continued along Goose Creek to Rock Springs Creek, and then to Thousand Springs Creek. It crossed current US-93 in several alternate trails, approximately 35 miles south of the project area (Helfrich et al., 1984).

Unlike other western territories, Idaho was largely settled by emigrants from other parts of the West, rather than by those who arrived directly from the East or Midwest. Initially overlooked during the overland immigrant expansion, typically settlers of Southern Idaho were farmers or storekeepers from Oregon attracted by the goldfields, or Mormons who migrated north from the Salt Lake Valley. The recorded portion of the Toana Freight Wagon Road within Idaho, described as retaining "very high values of integrity" (Gray, 2003:20), runs the length of Browns Bench adjacent to the project area, and is listed on the National Register of Historic Places. This wagon road was established in 1870 to supply the mines and towns of southern Idaho until completion of the railroad in the early 1880s (Figure 3.3.1-1). The Toana Road provided a link between Toano, Nevada, a railhead on the Central Pacific Railroad, and Boise, Idaho. To date, the Nevada portion of the Toana Wagon Road has not been formally recorded and, therefore, is not listed on the National Register of Historic Places.

The project area derives its name from China Mountain (China Creek Butte) and China Creek, named for a reported Chinese grave site situated along the historic Toana Wagon Road. It was told that the Toana Road crew met and killed Chinese laborers at this location, and placed them within a large grave (Gray, 2003:9-13).

Few people were initially drawn to Idaho for its land, much of which, especially on the Snake River Plain, appeared sterile and uninviting (Schwantes, 1991:96). Ranching and grazing of cattle was the earliest established use of the area and remains its dominant use today. Eventually, it was discovered that crops would grow well on the sage-covered flats of the Snake River Plain if water were available. The early twentieth century introduction of large-scale irrigation soon made it possible to settle and farm this area. Specifically, farming in the immediate area became possible with the creation of Salmon Falls Creek Reservoir in 1910 and Cedar Creek or Roseworth Reservoir in 1927. The land in and around the project area is among those areas presently too arid and too removed from a reliable irrigation water source to develop into any large-scale agriculture production activity other than grazing.

While mining was of little importance within the area of present southern Twin Falls County, particularly within the vicinity of China Mountain, it did play a major role in the settlement of northern Elko County. Mining in Nevada began with the exploitation of placer gold in 1849, and

within Elko County, small placer deposits were worked along the Jarbidge River, the Owyhee River, Van Duzer Creek, and in the mountains between the Owyhee and the Bruneau Rivers. These claims had been worked as early as the 1870s and into the early 1900s. Several mining districts occur near the project area in Nevada, including the Contact District, the Delano District, the Elk Mountain District, and the Jarbidge District (Schilling, 1976). Located closest to the project, the Contact District was primarily a copper producing area, but also yielded some gold, silver, lead, zinc, and tungsten. Originally known as the Salmon or Kit Carson district, the mining area of Contact was discovered in the 1870s. By 1876, Chinese worked the area of China Mountain, a hill located several miles south of the town of Contact, on a commission basis. Maximum production of the Contact District was reached in 1916-18, with additional production peaks in 1928-30 and again in 1942-46. The town of Contact, near the center of the mining district, is now a "ghost" mining town, recently kept active by highway traffic.

Strongly associated with the history of ranching in northeastern Nevada and southern Idaho was the presence of Basque sheepherders and cattlemen. After construction of the Toana Wagon Road in 1870, cattlemen began to exploit the rangelands of Salmon Falls Creek and Shoshone Basin in southern Idaho. By the 1870s, expanded agriculture and overcrowded rangelands in California pushed stockmen into the Great Basin, particularly northern Elko County. This growth of the livestock industry brought with it from the west a great number of Basque herders who were willing to endure extreme hardship and isolation, proving ideal for the hard work needed for ranching. Coming from the north and east were a number of Mormon sheepherders. Cattle ranchers went to great effort to defend this territory from sheepherders, causing Shoshone Basin to become a disputed borderland. The conflict erupted in 1896 with major sheep and cattle wars in Idaho. Cattle grazing continued in the Salmon Falls Creek area, until much of the rangeland became subject to early twentieth century reclamation projects (Idaho State Historical Society, 1981).

3.3.1.4 Literature Review, Records Search, and Surveys

A Class I record search was conducted for the project area and includes information on previous surveys and recorded sites on file at the Idaho and Nevada State Historic Preservation Offices and records on file with the BLM offices in Idaho and Nevada. The Class I record search was conducted at the Idaho State Historic Preservation Office, Boise, for the Idaho portion of the project area, and through the online Nevada Cultural Resource Information System for the Nevada portion of the project area. BLM records on file in Elko, Nevada, were also examined. The records searches included examination of an area extending in a 1-mile radius beyond the project area boundary.

Previous Inventories

Prior to studies currently underway for the project, some 24 archaeological inventories have been conducted within a 1-mile radius of the project area. Below are summarized the results of the more notable prior surveys.

In 1958 and 1959, students and faculty from Idaho State College Museum conducted intuitive archaeological surveys within the Browns Bench area, north of the Idaho-Nevada state line. At that

time, surveyors relied upon local informants to locate archaeological sites. Thirteen prehistoric sites were recorded within one mile of the project area, and, of these, six are within or adjacent to (within 100 feet of) the project boundaries (Swanson, 1965; Swanson, Powers, and Bryan,1964). Among these sites are two lithic scatters containing debitage and flaked stone tools; one location simply described as a campsite; one campsite containing debitage and flaked stone tools; one campsite containing debitage, flaked stone tools, and a lithic "quarry"; and one location described as a large, deep site containing a large amount of debitage. The seven prehistoric sites recorded within a one-mile buffer of the project area included two lithic quarries, two lithic quarries with associated campsites, two lithic scatters, and one extensive occupation site known as the Dean Site.

In 1974, eight cultural resources were recorded within a one mile radius of the project area. Mary Rusco and Evelyn Seelinger of the Nevada State Museum completed an archaeological survey of a proposed 230 kV transmission line right-of-way that extended through the project area. Recorded were: one isolated end scraper; one prehistoric lithic scatter; an isolated edge-modified obsidian flake; a lithic scatter of obsidian flakes and one Elko projectile point; a small lithic scatter containing eight obsidian flakes; an extensive lithic scatter and workshop containing obsidian and chert debitage and bifaces; an isolated obsidian flake with possible utilization scars; and a lithic scatter containing obsidian and chert flakes.

A single prehistoric archaeological site was recorded within the project area south of the state line in 1975 (Randolph, 1975). In the fall of that year, a survey of the Salmon Falls Pipeline project was completed, resulting in the recordation of an extensive, dense lithic scatter of black obsidian flakes and unworked pebbles covering an area of at least 5 acres. The large amount of obsidian suggested that the site served as a prehistoric lithic source.

Several archaeological sites were recorded in the vicinity of the project area in 1978, as part of the Sierra Pacific Power Company AT&T 230/345 kV transmission line survey west of US-93. As part of this project, two prehistoric sites were recorded by California State College, Stanislaus, including one site within the project area. This site was recorded as a scatter of obsidian flakes.

In 1981, two prehistoric cultural resources were recorded within at least 100 feet of the project area, including a biface of black ignimbrite material and a prehistoric lithic scatter containing at least three pieces of debitage. The following year, another site was recorded by the BLM as part of a Class II intuitive survey. This site was recorded as a small lithic scatter containing debitage, bifaces, and a source of lithic raw material.

Two large, prehistoric sites were recorded within the China Mountain project boundaries in 1984 as part of a volunteer survey effort (Sanger et al., 1984a, 1984b). Both sites were identified as obsidian sources or quarries, including workshops and lithic scatters containing debitage, bifaces, and projectile points. The sites were given the names "Old Man Quarry" and "Young Man Quarry."
In 1987, BLM Archaeologist Jack Young surveyed approximately 3 linear miles on the eastern slope of Browns Bench for a proposed project and recorded one prehistoric site as a result of this effort.

Located within 100 feet of the project area, this site is described as a lithic scatter containing three hunting blinds and two projectile point fragments. One Humboldt point and one non-diagnostic point fragment were found (Young, 1987).

BLM archaeologist Tim Murphy, with the assistance of Steve Dondero, conducted a field inventory of the proposed South Salmon Seeding Well in 1989, resulting in the recordation of an extensive lithic source area containing abundant ignimbrite gravel, a light density scatter of lithic debitage, two cores, and two bifaces. Because it lacked production stage artifacts and time-sensitive artifacts, it was recommended as not eligible for inclusion on the NRHP, and no further work was recommended with regard to the proposed well project (Murphy, 1989).

More than a decade passed before additional archaeological sites were recorded within or adjacent to the project area. In 2002, the BLM conducted a survey of six proposed meteorological towers within the China Mountain area (Ross, 2003). Approximately 30 acres were surveyed and four resources were formally recorded, including three lithic scatters and an isolated Elko series projectile point. Also noted during the 2002 survey was the historic Toana Wagon Road. Additional documentation of the history and route of the Toana Wagon Road in Twin Falls County was conducted in 2003. This freight wagon road was used to transport supplies to southwest Idaho mines from a railhead at Toana, Nevada, from 1870 to 1883 (Gray, 2003). A 35-mile portion of the road was recorded between the Nevada state line and Devil's Creek. This road segment was described as being in relatively pristine condition, although some portions have been upgraded to serve as canal roads, county roads, and local ranch project roads (Gray, 2003:12). As a result of this survey, the Toana Freight Wagon Road Historic District was added to the NRHP in November of 2006 (Ross, 2009).

In November of 2006, Ashley A. Konoske of Summit Envirosolutions, Inc. completed a Class III inventory of three proposed meteorological tower locations on public lands within the Elko District. As a result of the survey, two previously unrecorded sites were located, including one prehistoric lithic scatter and one multi-component site. The first site, a medium sized scatter of obsidian and ignimbrite flakes and bifaces was recorded and recommended ineligible for inclusion on the NRHP. Due to poor weather conditions, the second site was determined too large to fully record and was unevaluated for the NRHP. Because one proposed meteorological tower was located within the area of an archaeological site, it was recommended that the tower be moved to another suitable location, and that the new location be surveyed for cultural resource. It was also recommended that a second tower be relocated because it would fall within the area of another site (Konoske, 2007).

In 2007, the BLM contracted with Golder Associates, Ltd. to conduct an archaeological Class II sample survey of random, 80-acre units within the Jarbidge foothills. This survey was completed "to fill cultural resource data gaps" for the Jarbidge Field Office Resource Management Plan. Intensive survey of 27 sample units was completed during the months of June and July, 2007. Three 80-acre survey units were located within the project area and six were located adjacent to the project area (Golder Associates, 2008). Nine cultural resources were recorded within or adjacent to the project area, including seven prehistoric and two historic resources. Both historic sites were identified as

historic rock cairns, while one prehistoric site was also recorded as a rock cairn. Two cultural resources were identified as isolated ignimbrite bifaces. The remaining four prehistoric resources included: one lithic scatter containing at least 500 pieces of red and black ignimbrite debitage; one lithic scatter containing at least 50 ignimbrite flakes and several flaked stone tools; one small lithic scatter with a Rosegate projectile point fragment and one black ignimbrite flake; and one small lithic scatter containing six flakes and one biface of ignimbrite material.

In 2009, Ross also conducted a survey of three additional meteorological towers associated with the project. No new sites were recorded as a result of this survey; however, it was determined that Tower 012 would be located within the viewshed of the historic Toana Freight Wagon Road. Because the tower was not readily visible in excess of 1 mile and was off-set from the edge of a prominent ridge, it was determined that it would have no significant impact on the viewshed (Ross, 2009).

Overall, the records search conducted at the Idaho State Historic Preservation Office indicates that a total of 122 cultural resources are found within a one-mile radius of the project area. Of these, 30 previously-recorded resources are found within or adjacent to (within 100 feet of) the project area boundaries and accompanying linear corridors and include: one NRHP-listed historic property (the Toana Freight Wagon Road); two historic archaeological features (cairns); and 22 prehistoric archaeological sites (four "campsites," 17 lithic scatters/quarries, and one prehistoric cairn), and five lithic tool/flake isolated finds. Fifteen additional sites have been identified within or immediately adjacent to the Nevada portion of the project area.

The majority of the sites consist of lithic scatters and quarry or material procurement sites. The lithic scatters range from simple assemblages, consisting of fewer than 10 flakes to more concentrated scatters with a variety of tools. Two of the lithic scatter sites also have rock features interpreted as hunting blinds. Diagnostic points include Elko, Rosegate, and Humboldt types. The lithic scatter and quarry sites are often located in association with water but are also found at higher elevation ridgetops as well as mid-slope. Within the project area, small clusters of sites are found at the China Mountain peak and along Salmon Falls and Barbour creeks, but overall distribution of the previously-recorded sites is scattered and dispersed.

In addition to the archaeological resources, one historic resource is previously recorded in the project area. The NRHP-listed Toana Freight Wagon Road was used in the early 1870s to haul freight from Nevada to Idaho mining camps and Boise. This road connected with the Oregon Trail near Bliss and runs north-south along the west side of Salmon Falls Creek in Twin Falls County, extending along Browns Bench at the Idaho-Nevada state line. The road was listed on the National Register of Historic Places in 2006. This transportation corridor parallels Browns Bench from about 1 to 2 miles to the east of the project area and crosses the proposed location of the overhead transmission line.

An additional 109 previously recorded resources are found within a 1-mile radius of the proposed proejct, with 92 of these found in Idaho and 13 found in Nevada. Approximately 50 percent of these archaeological resources, mostly isolated, are clustered along the eastern slope of Browns Bench, an

area known for the presence of lithic source materials. The high site density likely reflects both intensive use of this area and lack of intensive survey coverage in adjoining areas. Most of the previously-recorded sites have not been evaluated for NRHP eligibility.

Of the 92 previously identified archaeological sites within Idaho, one is multi-component; 86 are prehistoric (three camps, 33 lithic scatters/quarries, and 50 isolates), and five are historic (one debris scatter and four isolates). In Nevada, identified resources include nine lithic scatters and two isolated finds. Most of the prehistoric sites are defined as lithic scatters and/or quarries, with occasional tools. Approximately half of the prehistoric resources (n=52) are defined by the presence of one to four lithic artifacts, usually flakes, and are recorded as isolates. A few sites have more complexity in terms of artifact classes, and include features and/or materials such as bone, charcoal, and pottery. Point styles reflect a range of site use during the Archaic period, suggested by Elko Corner-notched, Pinto Shouldered, and small side-notched styles.

Historical archaeological sites consist of five resources, including one small debris scatter and isolated finds such as horseshoes and animal traps. The single multi-component site consists of a cabin and lithic scatter.

Survey Methodology

The project area is within the Browns Bench region of northern Nevada and southern Idaho, part of an expansive zone of welded ash-flow tuff sheets formed by large-volume pyroclastic eruptions during the Pliocene and Upper Miocene. Several ash-flow sheets in the western U.S., such as Browns Bench, are known to cover an area as large as 10,000 km² and some contain zones of densely welded tuff that formed artifact-grade obsidian. Archaeological research and obsidian provenance studies have documented the widespread use of the Browns Bench geochemical obsidian type by Native Americans living in northern Nevada, southern Idaho, and northwestern Utah.

Being situated within the Browns Bench lithic landscape, the archaeological sensitivity of the project area was viewed as particularly high, especially regarding prehistoric resources. In consideration of this sensitivity, a Class III intensive field survey of the project's Area of Potential Effects was begun in 2009, covering a percentage of the total identified potential impact area, to assess the nature of resources present within the overall project area. The Class III inventory provided thorough coverage of a selected sample of the Area of Potential Effects, resulting in a total inventory of observable cultural properties within the sample. Included within the initial 2009 Area of Potential Effects were three named springs identified within the Inventory Plan for intensive field survey. Complete (100%) Class III inventory of potential impact areas would be undertaken before completion of the Final Environmental Impact Statement.

Class III inventories conducted to date focused on a survey of 500-foot-wide corridors (250-feet each side) that encompassed all project features. To date 49 percent of the proposed project features have been surveyed. The 2009 survey covered 3,547 acres (approximately 40% of the initial project footprint) and resulted in the identification of 391 cultural resources (Table 3.3.1-1). The 2009

sampling strategy utilized a combination of natural topography and planned project components as the primary inventory framework, including both systematic and intuitive approaches. In 2010, additional inventory of 488 acres was conducted for small segments of turbine strings to round out the selected sample. Cumulatively, 4,035 acres have been inventoried for cultural resources, accounting for 49 percent of the total Area of Potential Effects. The 2010 survey identified an additional 95 sites, for a cumulative total of 486 sites to date.

Table 3.3.1-1. Survey and Site Data by Year.

Component	2009	2010	Total
Acres Surveyed	3,547	488	**4,035**
Sites Identified	391	95	**486**

Because of the widespread distribution of natural and cultural obsidian anticipated within the project area, the preliminary Class III survey sought to develop project-specific resource recordation standards. To accomplish this, standard site and isolate definitional criteria were suppressed in favor of an approach that recognizes classes of archaeological resources (e.g., Class I, II, III) based primarily on surface artifact density (Tables 3.3.1-2).

Table 3.3.1-2. Resource Classes by Artifact Density Measure.

Resource Class	Density Measure (within a 30 m² [323 ft²] area)
Class I	1-5 artifacts; with or without features
Class II	6-24 artifacts; with or without features
Class III	25-99 artifacts; with or without features
Class IV	100-499 artifacts; with or without features
Class V	500+ artifacts; with or without features
Class VI	Feature only

The proposed recordation strategy for Class I resources (1-5 artifacts) considers such resources in much the same manner as isolated finds are traditionally recorded in both Nevada and Idaho. The Class I resources include a wide range of single prehistoric or historic artifacts, as well as some locales with sparse and generally diffuse artifact assemblages. The recordation strategy used to document these resources included a Class I Resource Documentation Form and photo-documentation.

For the remaining resource classes (II-VI), the recordation strategy followed standard procedures used in Nevada and Idaho. Specifically, for such resource classes within the state of Nevada, either the Nevada Short Form or Long Form (Standard Intermountain Antiquities Computer System form) was used, as appropriate. For Idaho, Class II to VI resources were recorded using the Archaeological Survey of Idaho site form.

An exception to standard site recording procedures was used for the extensive Class IV and Class V obsidian procurement areas. For these sites, recordation focused on technological sampling of lithic concentrations, and site boundaries incorporated the full areal extent of the site, unless the boundaries extended more than 656 feet (200 meters) outside the survey corridor, in which case they were designated on the site sketch map and GPS polygon as open-ended.

Survey Findings

The combined 2009 and 2010 sample surveys of 4,035 acres identified 486 cultural resources, including 389 prehistoric, 25 historic, 69 multiple component sites, as well as 3 properties whose temporal affiliation (prehistoric vs. historic) cannot be determined.

As shown in Table 3.3.1-3, Class I resources predominate the sample, accounting for about one-third of all resources. This class reflects a wide range of single prehistoric or historic artifacts, as well as other locales with sparse, diffuse assemblages of less than five items. Next in predominance is Class II, reflecting about one-fifth of the resources. Three-fourths of the Class II resources are prehistoric, with the remaining one-fourth representing historic and multiple component types.

Table 3.3.1-3. Resource Classes by Number and Identified Resources.

Resource Class	Number of Identified Resources
Class I	179 (36.8%)
Class II	106 (21.8%)
Class III	71 (14.6%)
Class IV	39 (8.0%)
Class V	79 (16.3%)
Class VI	12 (2.5%)
Total	**486 (100%)**

Class III resources account for about one-sixth of the site sample. The prehistoric resources are largely dominated by obsidian debitage, which occurs in varying quantities ranging from 25 to 100 pieces. Class IV resources account for less than one-tenth of the project sample. All but two Class IV resources are of prehistoric origin, defined largely by a predominance of lithic debitage, and secondarily by occasional flaked stone tools; two locales also have stacked rock features. Two multiple component Class IV sites are present.

Class V resources account for about one-sixth of the sample. Containing the largest quantity of artifacts, Class V resources, by their very nature, also exhibit the greatest range of artifact diversity, both for prehistoric and historic components. Class VI sites, defined as properties represented exclusively by cultural features, represent less than one-tenth of noted resources. Historic resources include segments of barbed-wire fence lines (either downed or standing) that mark cadastral section lines; various 1918 GLO survey benchmarks; a road bed that may represent an alternate route of the historic Toana Wagon Road; the former road bed of Monument Springs Road; and several rock cairns. Prehistoric resources are single, isolated stacked rock features.

Historic Resource Distribution

The sample inventory identified 94 resources with historic assemblages, including 69 multiple component (prehistoric and historic) and 25 historic components. A majority of historic resource locations are Class I types, many representing single or a small group (<5) of artifacts. Historic land use patterns are dominated by sheep and/or cattle ranching activities, as represented by a broad range of artifacts and features, including diffuse tin can scatters and several sheep rattles ("tin dogs"). Two of the three surveyed spring locales correspond with named historic cabins dating from the early 1900s.

A network of early 1920s juniper post fence lines and more modern metal fences are distributed across the project area, attesting to the livestock history of this region. Several temporary ranching camps are present and historic era stacked rock cairns also occur and may have served as boundary markers or location guides. According to a local landowner, some of the taller rock cairns are associated with Basque sheepherders whose presence is also noted by arborglyphs on aspen trees in the project area.

Transportation related sites include segments of the old Monument Spring trail road. Although the 2009 survey did not include that portion of the project area that intersects the historic Toana Wagon Road, it is anticipated that segments of this feature would be encountered.

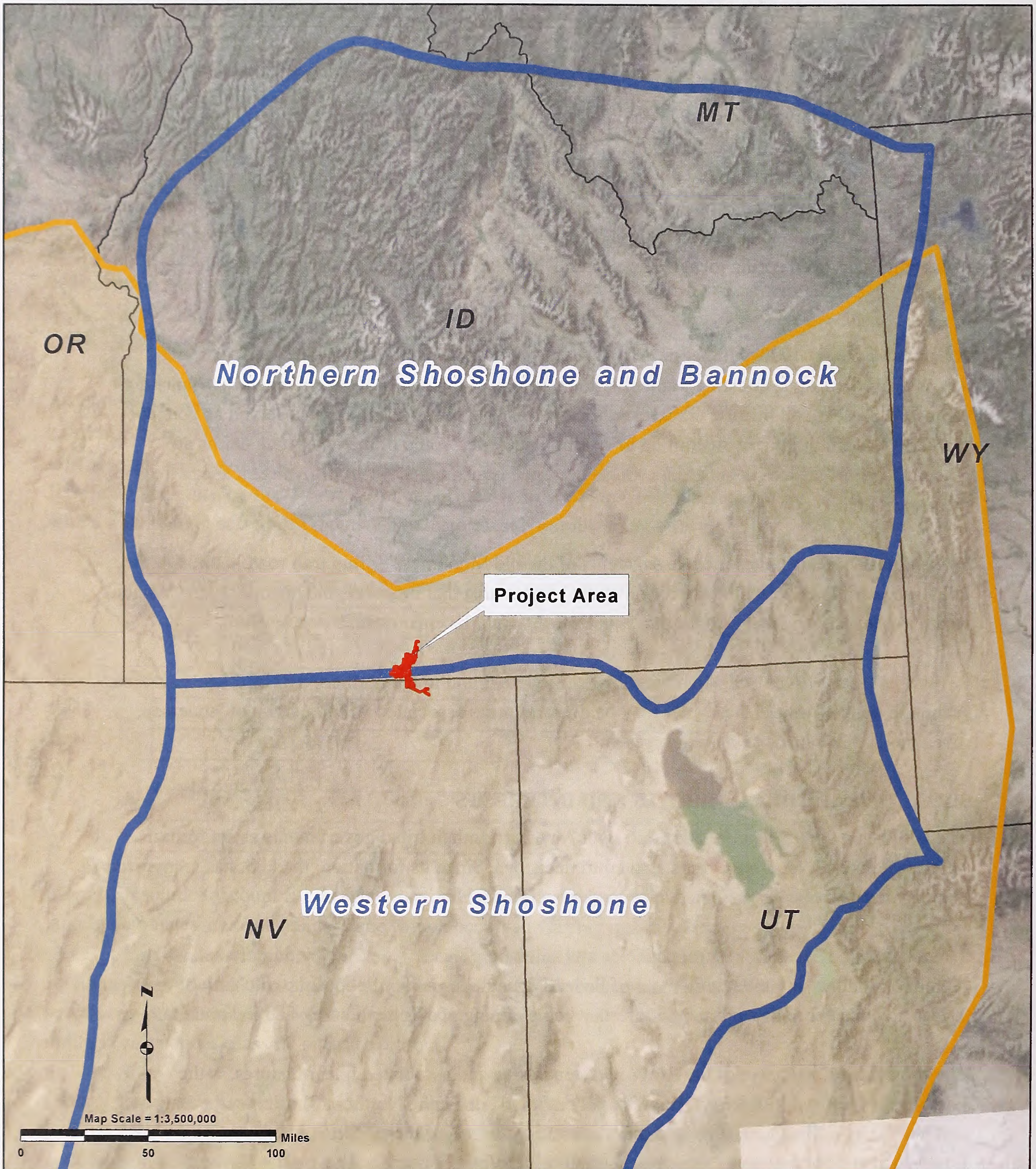
Several large, ca. 1940-1950s trash disposal sites were found in the northern part of the project area. Although not confirmed, these sites may be disposal areas associated with the town of Rogerson, given the large quantity of material present.

3.3.2 TRIBAL TREATY RIGHTS AND INTERESTS

The U.S. has a unique legal relationship with American Indian tribal governments as set forth in treaties, statutes, Executive Orders, and court decisions. Since its formation, the U.S. has recognized Native American Tribes as domestic dependent nations under its protection.

The relationship between Federal agencies and sovereign Tribes is defined by numerous laws and regulations addressing the requirement of Federal agencies to notify or consult with Native American Tribes, to consider their rights and interests when planning and implementing Federal undertakings.

The project area, inclusive of the ROW preference area and associated linear features, is the homeland of three culturally and linguistically related Tribes: the Northern Shoshone, the Bannock, and the Western Shoshone (Figure 3.3.2-1). In the latter half of the 19th century, reservations were established at Fort Hall near Blackfoot in eastern Idaho and at Duck Valley on the Nevada/Idaho border west of the Bruneau River. The composite Tribes residing on these reservations today actively practice their culture and retain treaty and aboriginal rights and/or interests in the project area.



LEGEND

Project Area

Great Basin Boundary

Tribal Territory Boundary

Figure 3.3.2-1. Ethnographic Regions

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No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM. No warranty is made by the BLM as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data.

The BLM consults with Native American Tribes in conformance with laws, regulations, policies, and executive orders. Additionally, the BLM considers and protects off-reservation treaty-reserved fishing, hunting, gathering, and similar un-relinquished rights of access and resource use on the public lands it administers. This includes rights of access and use for ceremonial and other traditional cultural practices. Within the project area, the Shoshone-Bannock Tribes of the Fort Hall Reservation have rights, reserved in the Fort Bridger Treaty of 1868, to hunt, fish, and gather on the unoccupied lands of the U.S. The Shoshone-Paiute Tribes of the Duck Valley Reservation assert aboriginal rights to their traditional homelands. Treaties with the U.S. ceding aboriginal title to those lands now federally administered were never ratified.

Consultation with the Shoshone-Paiute Tribes of the Duck Valley Reservation and the Shoshone-Bannock Tribes of the Fort Hall Reservation over the years indicates the presence of a wide range of resources related to tribal rights and/or interests and ongoing use in the project area. These include resources associated with practices like hunting; trapping; fishing; gathering food, medicinal plants, and other natural products; the availability of clean water and healthy plant and animal populations; as well as aboriginal archaeological sites, sacred sites, and traditional cultural properties. The retention of public land is of particular interest to the Tribes since off-reservation rights and/or interests are linked to Federal management.

Tribal interests regarding environmental resources are not limited to archaeological or historical sites, but include natural resources and geological formations present throughout the region. Natural resources constitute critical past and present components of Native American daily life and religious beliefs, while plants and animals are sources of food, raw materials, and medicines, and are components of traditional practices. Natural landforms mark locations that are significant for keeping the historic memory of tribal people alive and for teaching children about their culture and history.

Native Americans believe that they have inhabited their traditional homelands since the beginning of time. Archaeological surveys have found evidence that Native Americans used the lands in and around the project area on a temporary or seasonal basis. Elsewhere, Native Americans have emphasized that a lack of abundant artifacts and archaeological remains does not mean that their people did not use an area or that the land is not an integral part of their cultural ecosystem and this observation likely applies to the project area as well. Native Americans assign meanings to places involved with their creation as a people, with religious stories, burials, and important secular events. The traditional stories of the Western Shoshone, Northern Shoshone, and Bannock peoples identify such places.

Information on sites and locations of Native American concern, or Traditional Cultural Properties, which often include localities that are sacred to a particular indigenous group, frequently is not made available to parties outside the indigenous group. Few Traditional Cultural Properties are currently listed in the site files of the Idaho or Nevada BLM or state historic preservation offices. However, scarcity of such sites in these databases does not necessarily indicate that only a few Traditional Cultural Properties actually exist. To ensure that these resources are identified and appropriately

treated, tribal consultation is underway to identify areas that might be disturbed. Such action would ensure compliance with Section 106 of the National Historic Preservation Act, the American Indian Religious Freedom Act, and other appropriate laws and regulations. This consultation process would include preparation of confidential ethnographic reports documenting the interests and concerns of the Shoshone-Paiute and Shoshone-Bannock peoples. Because these documents have not yet been completed, no specific statements about impacts to particular locations can be provided at this time. The Shoshone-Paiute Tribes, however, have indicated that Traditional Cultural Properties of importance to them are present within the project area.

3.3.2.1 Ethnography

The project area includes portions of the aboriginal and ethnohistoric ranges of the Western Shoshone, Northern Shoshone, and Bannock Tribes (Figure 3.3.2-1). The Western and Northern Shoshone groups spoke varieties of Central Numic, a component of the Numic branch of the Uto-Aztecan family, while the Bannock spoke a Western Numic language related to that of the neighboring Northern Paiute. The Central Numic embraces three languages: Panamint; Shoshone; and Comanche. Panamint was spoken by the Panamint Western Shoshone who inhabited the Death Valley area. Shoshone was spoken by other Western Shoshone groups, including the Goshute of northwestern Utah, as well as by the Northern Shoshone of Idaho, and the Eastern Shoshone of western Wyoming. The Bannock in Idaho speak a Western Numic dialect similar to and mutually intelligible with the dialects of the Northern Paiute in Oregon and Nevada (Miller, 1986:98; Murphy and Murphy, 1986:284).

Principal sources regarding Shoshone/Bannock lifeways focus on the early work of ethnographer Julian Steward, who conducted fieldwork among these people during the 1920s and 1930s. His studies resulted in the publication of various papers and monographs concerned with the Great Basin, most notably his *Basin-Plateau Aboriginal Sociopolitical Groups* (Steward, 1938). Other principal accounts include the work of Kroeber (1925), Butler (1986), Eggan et al. (1955), Fowler and Koch (1982), Murphy and Murphy (1986), Shimkin (1986), Stewart (1959, 1965, 1966, 1970, 1978), Thomas (1983), Thomas, Pendleton, and Cappannari (1986), and Walker (1973, 1980, 1982, 1993a, 1993b, 2002, 2003). The importance of these studies offers insight as to how native inhabitants lived through the Great Basin region and they remain an important source of information towards explaining cultural resources.

Western Shoshone

Traditionally the Western Shoshone people practiced a highly mobile lifestyle based on the seasonal exploitation of floral and faunal resources that required relatively frequent residential and logistic moves predicated on cyclic environmental variations. Across much of the area, the largest single settlement was the winter village, where families gathered during the cold months when fresh plant foods were unavailable. Encampments were occupied by as many as 15-20 families, or by as few as one single nuclear group. The villages were sited with ready access to vital resources, namely stored foods such as seeds, roots, pine nuts, dried fish, and mammal meat; ample water; sufficient wood for houses and fuel; as well as to avoid settings with extreme low winter temperatures (Grayson,

1993:37; Steward, 1938:232). Ideal locales typically included the lower edge of the piñon-juniper woodland, where temperatures averaged as much as 15 degrees F warmer than valley bottoms (Grayson, 1993:37), the mouths of canyons, or broad valleys near fishing streams. Even the location of the seasonal villages was unpredictable from year-to-year based mainly on resource availability and productivity. Near the project area, Steward (1938:233) noted that in the desert bordering the Snake River, people had to traverse vast territories, modifying their yearly circuit considerably as local rainfall or other factors affected plant growth, and were not always able to return to the same winter village.

Due to their mobile lifeways, Western Shoshone structures tended to be minimal in size and materials. Housing included conical huts of poles and bark, sometimes held in place by rocks, which served as winter dwellings. Lighter structures of brush served as dwellings and/or shades in warmer months, and some groups employed circular or domed wickiups. Conical sweathouses were common to all Western Shoshone, and most groups utilized menstrual huts.

For most of the year, families traveled alone, or in very small groups, to harvest within an expansive area, ranging typically 20 miles or more from the winter village (Steward, 1933:232). Plant harvesting was the main subsistence activity, as game was relatively scarce, and hunts usually lasted only one to two weeks and never more than six weeks (Steward, 1933:231). Small family groups relied primarily on the gathering seeds, piñon nuts, greens, roots, and berries. Resource emphasis varied, however, depending upon the seasonality and local availability of specific plants. Piñon nut harvests occurred in the fall and stored nut reserves provided the bulk of the diet during winter months (Thomas et al., 1986). Gathering of plant foods was supplemented by hunting of large and small game, although these resources were of less importance (Steward, 1938:33). Targeted large game animals included pronghorn, deer, bighorn sheep, and bison.

Subsistence activities employed a variety of tools, including sinew-backed bows, animal-skin quivers, arrows of willow and reed, hunting nets, flaked stone tools, milling stones, and digging sticks. The gathering and processing of plant foods was facilitated by the use of coiled baskets, twined seed beaters and winnowing trays, and twined conical burden baskets. Ceramics were generally manufactured locally. Water was collected and carried with woven, pitch-lined, water baskets.

Western Shoshone social organization was apparently fluid and flexible, primarily due to the high residential mobility, small group size, and disproportionate resource distribution throughout their territory. Small territories were loosely defined around winter villages, or valleys were occupied by several family groups that hunted and gathered within and between various ecological zones, as seasonal resources became available. Several families would winter together at a central village, the composition of which was variable from year to year.

Northern Shoshone and Bannock

At the time of historic contact (ca. 1805-1830), much of southern Idaho was the homeland of the Northern Shoshone and Bannock Indians. The term Northern Shoshone is used largely to differentiate

the Shoshones of the upper Columbia River drainage from the Western Shoshone of Nevada and the Eastern Shoshone of western Wyoming. This difference is not so much political or social, but largely reflects the lack of horses and access to Plains bison hunting areas among the Western Shoshone. A consequence of this difference was the profusion of Plains Indian cultural and social traits among the Eastern and Northern groups and their relative absence among the Western people. The Eastern and Northern groups are less easily distinguishable, and the conventional division rests primarily upon their separate locales and the importance of salmon fishing to the Northern Shoshone.

The Bannock were Northern Paiute speakers who had migrated from Oregon into the general Snake River Plain area, where they lived among the Shoshone. The Bannock, in turn, are differentiated from other Northern Paiute groups by their adoption of the horse and participation in organized bison hunts. Both the Shoshone and Bannock languages are members of the Numic branch of the larger Uto-Aztecan language family. The spread of Numic speakers in the Great Basin is a relatively recent, and apparently a quite rapid phenomenon, such that there was considerable bilingualism among the Shoshone and Bannock in Idaho (Murphy & Murphy, 1986:284).

The Northern Shoshone and Bannock occupied an area generally along the Snake River Plain and the mountains to the north, though many neighboring Eastern Shoshone and Northern Paiute groups also used resources of this region (Murphy & Murphy, 1986:287). Principal population areas included the upper Snake River valley in the general area surrounding Fort Hall; the Lemhi River valley; the Boise, Payette, and Weiser valleys; the Sawtooth Range; and the Bruneau River Valley (Murphy & Murphy, 1986:288). Local groups within the Shoshone region were often identified by other Indian groups and by early settlers based on foods that were commonly eaten. Nomenclature included Agaideka (Salmon Eaters), those who lived along the Snake River; Tukudeka (Sheepeaters), residents in the Sawtooth Mountains; Yahandeka (Groundhog Eaters), the inhabitants of the Boise River; and Kammedeka (Jackrabbit Eaters), who resided along Bannock Creek and the Raft River. These classifications, however, do not refer to political divisions, and their use resulted in confusing designations given the high mobility and seasonal resource exploitation practiced by all of these groups (Murphy & Murphy, 1986:287, 306).

3.3.3 ECONOMIC CONDITIONS

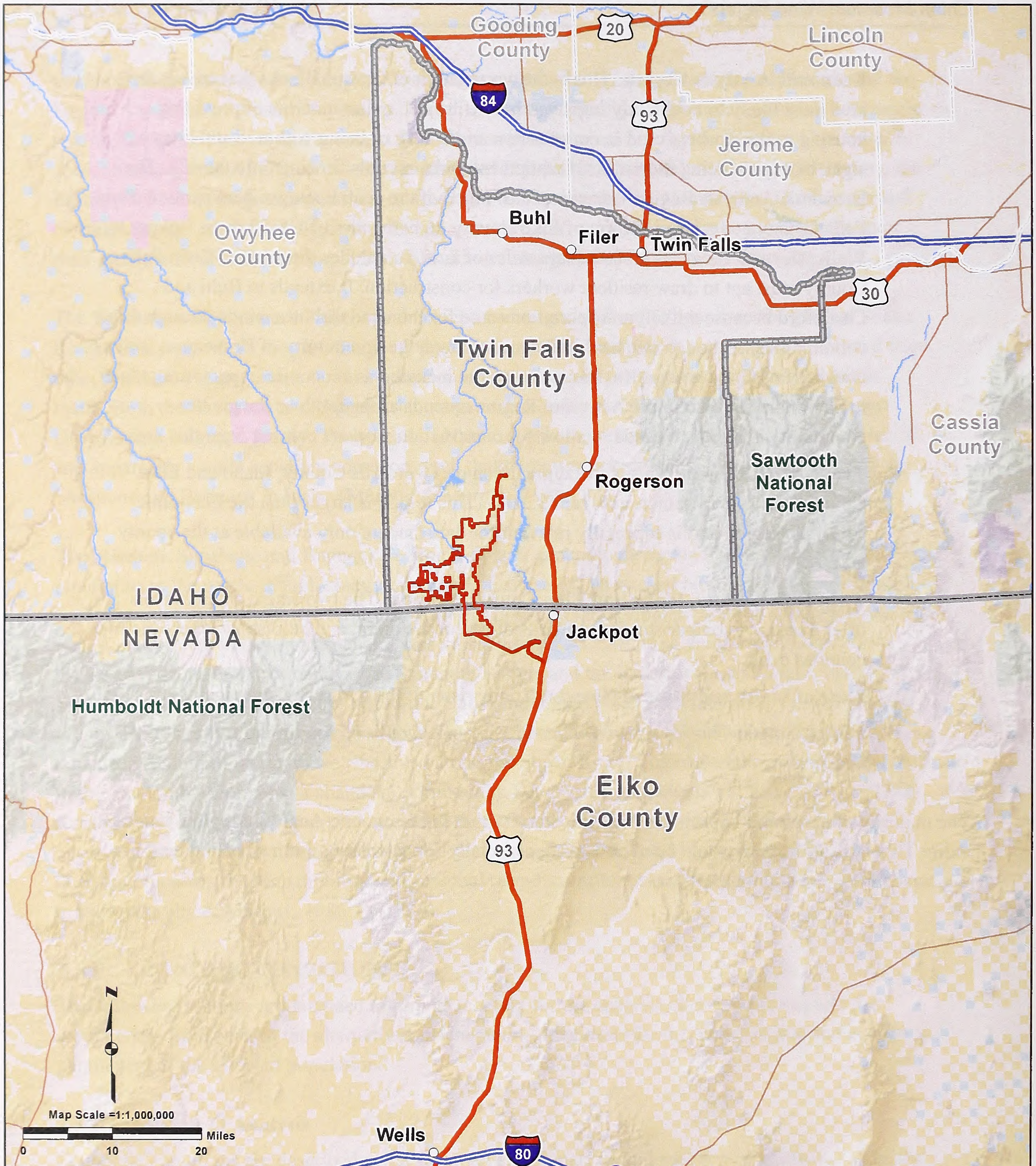
The following sections are intended to provide context for the analysis of economic impacts that would come from each of the alternatives in Chapter 4. They describe the demographic and economic parameters of the affected population.

3.3.3.1 Levels of Analysis

Economic conditions are described using seven levels of analysis and baseline comparisons since the project area straddles the Idaho/Nevada state line and parts of two counties (Figure 3.3.3-1). Where possible, characteristics are compared across the following areas:

- **Economic Analysis Region:** This is the aggregation of Census Blocks that covers the area most likely to be directly impacted by the project, either in terms of providing housing to the workers used in construction and O&M, or being within visual lines of sight, or experiencing the traffic of equipment and materials flowing onto the site. The Economic Analysis Region is composed of much of the central and western parts of Twin Falls County and a large portion of Elko County on both sides of US-93 from Jackpot to Wells, Nevada. It covers 4,009 square miles of land. It includes the parts of Twin Falls County most apt to draw resident workers for construction. It extends to Buhl and Castleford because a likely transportation route for the wind turbines winds through those communities. Although one haul route goes through the community of Bruneau as well as Owyhee and Elmore counties, this area was not included as economic impacts are judged to be minor. The Economic Activities Region extends as far south as the greater community of Wells, Nevada to allow for construction workers coming from this area.
- **Two-County Region:** This is the aggregation of Twin Falls County, Idaho and Elko County, Nevada, as shown in Figure 3.3.3-1. This region is larger than the Economic Analysis Region and is especially relevant for data that are only available at the county level.
- **Twin Falls County, Idaho and Elko County, Nevada:** The two single county levels offer a basis of comparison for residents of one or the other, and help show where the two counties differ.
- **State of Idaho and State of Nevada:** Comparison of the two states' averages.
- **United States:** This level lends understanding of how this region differs from national averages.

The majority of economic impacts are likely to occur within the Economic Analysis Region, but the entire Two-County Region would be used as well, especially for calculating indirect economic impacts that require county level data.



LEGEND

- Project Area Boundary
- Interstate
- Highway
- Major Road

Land Status (Ownership)

- BLM
- NPS
- USFS
- State
- Military
- Private
- BOR

Figure 3.3.3-1. Two-County Region Economic Analysis Area

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3.3.3.2 Demographics

Twin Falls and Elko counties had estimated populations of 73,780 and 48,076, respectively in 2008, for a total population of 121,946 in the Two-County Region. The population in the Economic Analysis Region in 2008 was smaller, at 73,551 (Table 3.3.3-1).

Table 3.3.3-1. Resident Population.

	Twin Falls County	Elko County	Two-County Region	Economic Analysis Region	State of Idaho	State of Nevada	United States
1990 Census	53,580	33,530	87,110	53,801	1,006,749	1,201,833	248,709,873
2000 Census	64,284	45,291	109,575	64,158	1,293,953	1,998,257	281,421,906
2008 Estimate	73,870	48,076	121,946	73,551	1,513,754	2,616,430	304,141,549
2013 Projection	80,392	49,804	130,196	79,996	1,657,732	3,010,973	319,161,431
Annualized Growth 1990-200	2.0%	3.5%	2.6%	1.9%	2.9%	6.6%	1.3%
Annualized Growth 2000-2008 (Est.)	1.9%	0.8%	1.4%	1.8%	2.1%	3.9%	1.0%
Annualized Growth 2008-2013 (Proj.)	1.8%	0.7%	1.4%	1.8%	1.9%	3.0%	1.0%

Source: Claritas Update Demographics™, April 2008, The Nielsen Company

Both counties grew in the 1990s at rates faster than the United States' 1.3 percent annual growth rate, but slower than the growth rates of their respective states. Elko County, in particular, boomed with the mining industry in the 1990s. From 2000 to 2008, both counties grew more slowly than their states, but Twin Falls County stayed closer to the Idaho average. Elko County grew more slowly than the U.S. in that period. All the growth rates slowed after the 1990s (Table 3.3.3-1).

Claritas (2008) demographics data projects population growth in the Two-County Region to slow again from 2008 to 2013 and Elko County is projected to grow more slowly than the U.S. since the Economic Analysis Region contains more of Twin Falls County than Elko County, its population growth tends to mirror Twin Falls.

Table 3.3.3-2 describes the population by race and Hispanic origin for the project. Elko County is more racially diverse than Twin Falls County. The Hispanic community in Elko County accounts for 21.2 percent of its population, compared to 11.9 percent for Twin Falls County. Elko County also has a Native American population (5.2%), with most living outside the Economic Analysis Region at the Duck Valley Indian Reservation in northwest Elko County. The vast majority (90.1%) of the Economic Analysis Region population is white, with the dominant minority population being Hispanic.

Table 3.3.3-2. Estimated 2008 Resident Population by Race and Hispanic Origin.

	Twin Falls County	Elko County	Two-County Region	Economic Analysis Region	State of Idaho	State of Nevada	United States
2008 Estimated Population by Single Race Classification	73,870	48,076	121,946	73,551	1,513,754	2,616,430	304,141,549
White Alone	90.8%	80.7%	86.8%	90.1%	89.3%	70.0%	72.7%
Non-White	9.2%	19.3%	13.2%	9.9%	10.7%	30.0%	27.3%
Black or African American Alone	0.2%	0.7%	0.4%	0.2%	0.6%	7.5%	12.4%
American Indian and Alaska Native Alone	0.8%	5.2%	2.5%	0.9%	1.4%	1.3%	0.9%
Asian Alone	0.8%	0.9%	0.8%	0.8%	1.1%	6.0%	4.4%
Native Hawaiian and Other Pacific Islander Alone	0.1%	0.2%	0.1%	0.1%	0.1%	0.5%	0.2%
Some Other Race Alone	4.8%	9.1%	6.5%	5.2%	5.2%	10.1%	6.6%
Two or More Races	2.5%	3.2%	2.8%	2.6%	2.4%	4.6%	2.8%
Hispanic or Latino	11.9%	21.2%	15.6%	12.1%	9.7%	25.3%	15.2%

Source: Claritas Update Demographics™, April 2008, The Nielsen Company.

3.3.3.3 Housing Characteristics

Elko County has a higher proportion of owner-occupied housing than Twin Falls County. The Economic Analysis Region has a higher proportion of renter-occupied homes than the county, and approximates the U.S. average. Owner-occupied homes within the Economic Analysis Region had a 2008 estimated median value of $142,045, compared to a median Idaho value of $167,074, a Nevada value of $284,094, and a U.S. value of $178,626.

3.3.3.4 Income Levels

Two measures are most commonly used to measure the relative prosperity of a population. The first, per capita income is calculated by taking total personal income for the region and dividing it by the total number of people living there. It is best used in comparing a large number of diverse areas. Table 3.3.3-3 shows that the per capita income of the U.S. in 2008 was estimated at $25,933. The state of Nevada was above that level at $26,779, due primarily to wealth generated by the urban population of the Las Vegas area. The per capita income in the state of Idaho was much lower, at $21,598. The per capita income in Elko County was 87 percent of the U.S. average, whereas the per capita income in Twin Falls County was 78 percent. The per capita income in the Economic Analysis Region closely matches that of Twin Falls County.

Table 3.3.3-3. Estimated 2008 Household Income.

	Twin Falls County	Elko County	Two-County Region	Economic Analysis Region	State of Idaho	State of Nevada	United States
2008 Estimated Per Capita Income	$20,140	$22,508	$21,073	$20,228	$21,598	$26,779	$25,933
2008 Estimated Median Household Income	$40,770	$58,088	$46,143	$40,927	$45,180	$55,609	$50,170

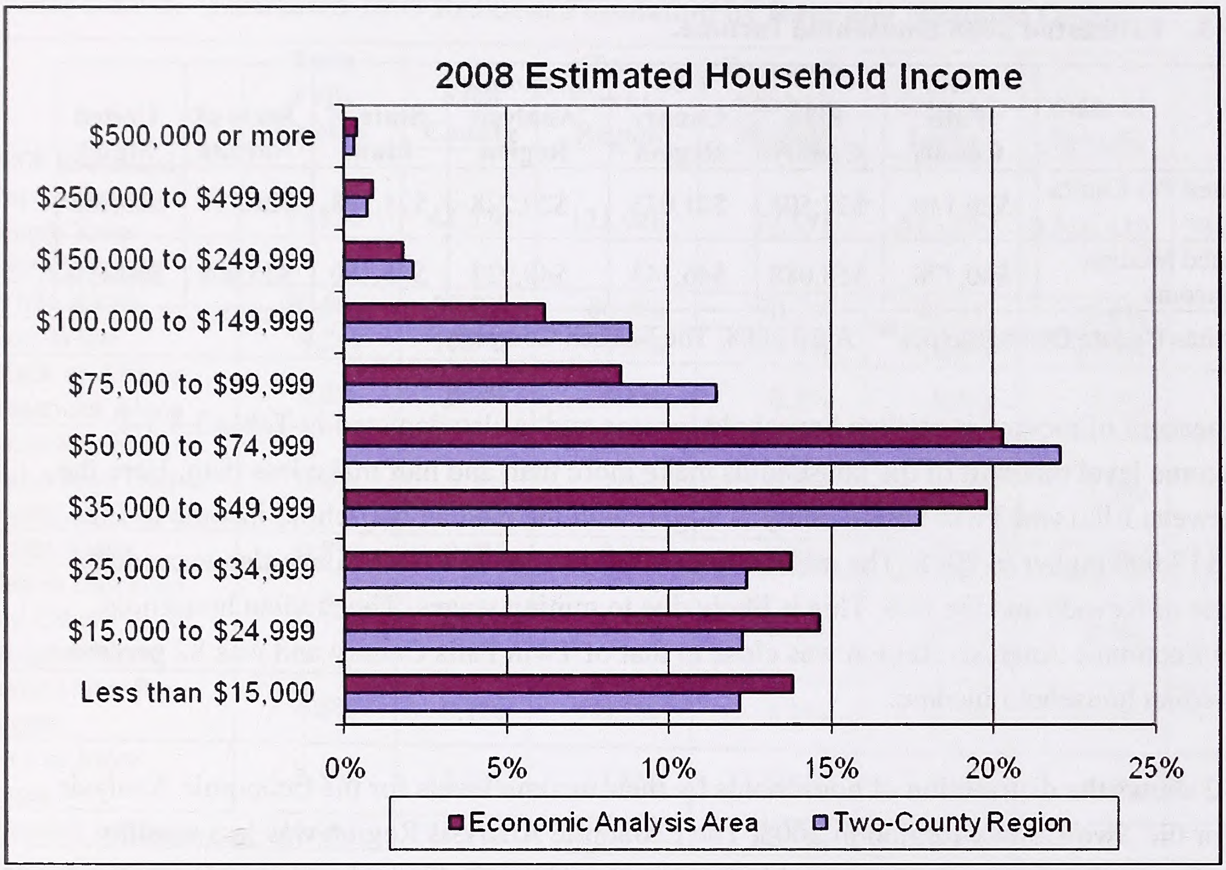
Source: Claritas Update Demographics™, April 2008, The Nielsen Company.

The second measure of income is median household income and is also depicted in Table 3.3.3-3. This is the income level that half of the households make more than and half make less than. Here the difference between Elko and Twin Falls County is larger, with the median household income in Elko County over $17,000 higher in 2008. The median household income in Elko County also exceeded that of the state of Nevada and the U.S. This is likely due to mining wages. The median household income in the Economic Analysis Region was close to that of Twin Falls County and was 82 percent of the U.S. median household income.

Figure 3.3.3-2 shows the distribution of households by their income levels for the Economic Analysis Region and for the Two-County Region in 2008. The Economic Analysis Region was less wealthy than the Two-County Region, as demonstrated by having more households in the lower income levels and fewer making over $50,000 per year.

The regional economy can also be examined by levels of personal income instead of employment. The services sector of the economy has grown much faster than agriculture, mining, construction, or manufacturing between 1970 and 2000, and since then the health and business services sector has continued to grow. Overall during this period, the relative level of prosperity in the region has been improving. Additional detail on the community economic profile and trends is in the project file.

The other sector that is growing rapidly in the region is non-labor income. This income type is composed of payments to owned assets that come as dividends, interest, and rent, and transfer payments. The majority of transfer payments go to senior citizens and veterans as Social Security, Medicare, and pensions. In 2005, non-labor income comprised 31.3 percent of the Two-County Region's $3.2 billion economy. While the proportion of non-labor income seems large and is growing, the share of non-labor income in the Two-County Region is lower than the U.S. share of 37.1 percent due to the younger population in the region.



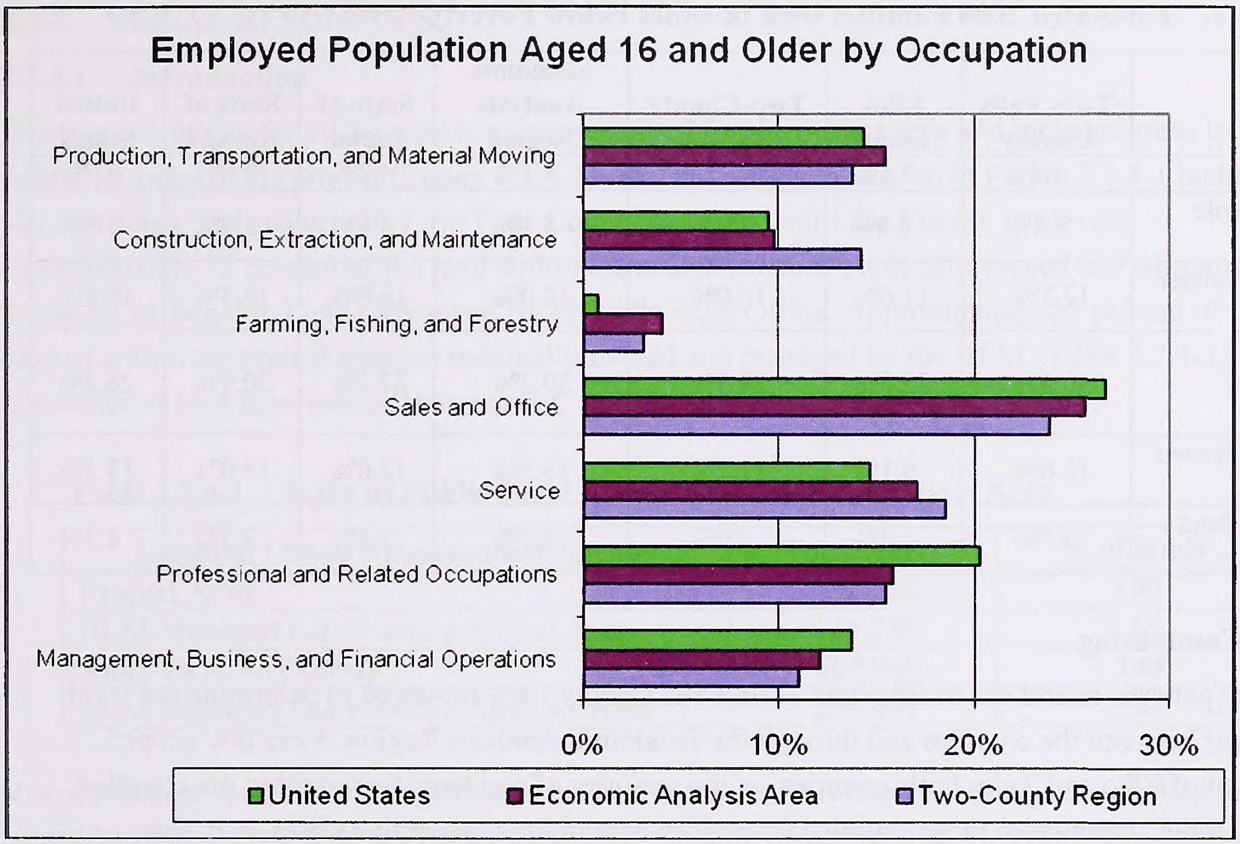
Source: Claritas Update Demographics™, April 2008, The Nielsen Company.

Figure 3.3.3-2. Economic Analysis Region and Two-County Region: 2008 Estimated Household Income.

3.3.3.5 Employment

Figure 3.3.3-3 shows 2008 data estimates of what occupations are prevalent in the Economic Analysis Region and Two-County Region. Both have more employment in farming, fishing, and forestry than the U.S., and more people involved in service sector jobs. The Economic Analysis Region and the Two-County Region lag the U.S. slightly in professional jobs. The Two-County Region is much higher in construction, extraction and maintenance jobs than the smaller Economic Analysis Region. This is due to a higher level of mining employment in Elko County. The percentage of employment in the production, transportation, and material moving occupations is higher in the Economic Analysis Region than both the Two-County Region and the U.S.

The Headwaters Economic Profile system (2008) was used to compare local employment in industry sectors to the national average. The Two-County Region is more specialized in mining, tourism and recreation services, and agriculture than the U.S., and has less reliance on manufacturing (it has a more natural resource-dependent structure). For example, the tourism sector (arts, entertainment and recreation plus accommodation and food services) represents 14 percent of the jobs in the Two-County Region.



Source: Claritas Update Demographics[TM], April 2008, The Nielsen Company.

Figure 3.3.3-3. Economic Analysis Region, Two-County Region, and U.S: 2008 Estimated Employed Population Aged 16 and Over by Occupation.

Unemployment rates for the Two-County Region are generally below the rates for either Idaho and Nevada or the U.S. Moreover, there is little seasonal variation in unemployment rates. This demonstrates relatively more diversity in the local economies than any single industry.

The best measure of the absence of income at the household level is whether families meet the Federal definitions for poverty. Within the Economic Analysis Region, an estimated 4.1 percent of families were estimated to be in poverty in 2008. This rate was higher than the U.S. rate (3.7%), slightly lower than the rates for Idaho (4.2%) and Twin Falls County (4.4%), and greater than the rates for Nevada (3%) and Elko County (3.6%). Consistent with national patterns, the poverty rates of families with children was considerably higher than those without children (13.5% versus 4.3%). In Idaho and Twin Falls County, however, childhood poverty was much higher than it was in Nevada and in Elko County. This pattern persists for all three family types: those with married-couples, those with male heads of household, and those with female heads of household. Family poverty rates were highest among female-headed families, where nearly one in three families was below the poverty line in 2008 (Table 3.3.3-4).

Table 3.3.3-4. Estimated 2008 Families with Incomes Below Poverty Level.

	Twin Falls County	Elko County	Two-County Region	Economic Analysis Region	State of Idaho	State of Nevada	United States
All Families	4.4%	3.6%	4.1%	4.1%	4.2%	3.0%	3.7%
Married-couple Families	5.4%	4.4%	5.0%	5.1%	5.1%	3.9%	4.8%
Male Householder Families	12.3%	11.6%	12.0%	12.0%	15.9%	13.5%	16.4%
Female Householder Families	30.0%	25.8%	28.5%	30.2%	27.2%	20.9%	26.2%
Families with own Children	13.6%	9.1%	11.7%	13.5%	12.0%	11.0%	13.5%
Families without own Children	3.9%	4.4%	4.0%	3.7%	3.8%	3.3%	4.3%

3.3.3.6 Commuting

Commuting patterns in and out of Elko and Twin Falls County were reviewed to determine the level of movement between the counties and through the Economic Analysis Region. Very few people commute out of Elko and Twin Falls counties, as the majority of residents work within the counties. Although people commute to these counties from elsewhere in their respective states, very few commute from Idaho into Nevada, and vice versa. There are small numbers of commuters between Elko and Twin Falls counties. The city of Jackpot, Nevada is the connection, providing entertainment and some construction jobs to Twin Falls County.

3.3.3.7 Environmental Justice

Federal agencies are required to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income communities as specified by Executive Order 12898, dated February 11, 1994. Minority and low-income populations are to be addressed in the NEPA process.

Table 3.3.3-2 shows that the non-white population of the Economic Analysis Region is 9.9 percent, which is less diverse than the Idaho average of 10.7 percent. An estimated 12.1 percent of the Economic Analysis Region is of Hispanic Origin. This is greater than the 9.7 percent of the Idaho population, but well below the 25.3 percent of the Nevada population that is Hispanic.

In terms of household income, an estimated 13.8 percent of households in the Economic Analysis Region reported their income was less than $15,000 in 2000, compared to 15.8 percent and 12.4 percent for Idaho and Nevada respectively (Figure 3.3.3-2). The median household income of $40,927 in the Economic Analysis Region in 2008 was 82 percent of the U.S. average and 91 percent of the Idaho average (Table 3.3.3-3). An estimated 4.1 percent of families in the Economic Analysis Region were living below the poverty level in 2008, which is slightly less than the Idaho average of 4.2 percent, but greater than the Nevada average of 3.0 percent.

3.3.4 VISUAL RESOURCES

3.3.4.1 Introduction

Existing conditions for visual resources are described for the project area and includes areas located within 10 miles of the project (Figure 3.3.4-1). The analysis area, shown in Figure 3.3.4-1 includes 407,968 acres, and spans both Twin Falls County in Idaho, and Elko County in Nevada. Approximately 72 percent of the land within the analysis area is publically-owned and administered by the BLM Jarbidge Field Office and BLM Wells Field Office. Approximately 65 percent of lands located within the project area are publically-owned and managed by the BLM (Table 3.3.4-1). The remainder of land is private or state-owned.

Table 3.3.4-1. Acres of Public Land Located Within the Analysis Area.

Location / Land Management Agency	Total Acres	% of lands
Project Area	**32,228**	**100**
BLM-Managed Lands within Project Area	21,235	65
Analysis Area (Total)	**407,968**	**100**
BLM-Managed Lands within Analysis Area	294,441	72

Visual resources on BLM-managed lands located in the analysis area are managed according to Visual Resource Management (VRM) Class II, III, and IV objectives (BLM, 1986). Management objectives for each VRM class are defined below:

VRM Class II Objective: Retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

VRM Class III Objective: Partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view.

VRM Class IV Objective: Provide for management activities, which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high but every attempt should be made to minimize the impact of activities.

LEGEND

Right-of-way Preference Area

Visual Resources Study Area

VRM Class

II III IV

Land Status (Ownership)

BLM Private State USFS

Viewshed Analysis

Area is Not Visible

Area is Visible

Figure 3.3.4-1. Visual Resources Analysis Area

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A large percentage of lands within the analysis area are managed as VRM Class II and Class III visual resource objectives (9% and 58% respectively) (Table 3.3.4-2, Figure 3.3.4-1). Within the boundaries of the project area, 10 percent of lands (3,190 acres) are managed by VRM Class II objectives and 89 percent (28,769 acres) are managed as VRM Class III objectives.

Table 3.3.4-2. VRM Objectives for Lands Located within the Analysis Area.

VRM Class	Project Area Acres	Analysis Area Acres
II	3,190	66,661
III	28,769	296,947
IV	0	26,870

3.3.4.2 Landscape Character

The project area is located in the northern Great Basin physiographic province. The area is characterized by the broad Snake River Basin, the Salmon Falls Creek subbasin and the predominantly north-south trending elevation mountain ranges of northern Nevada. The analysis area was assessed within four general viewshed areas: (1) Salmon Falls Creek Reservoir, (2) US-93, (3) Monument Springs Road, and (4) southern OHV roads located to the southwest of the project area. Photographs of these viewshed area are found in Appendix 3F (Visual Resources Photo Log) and Appendix 4B (Visual Simulations). The overall landscape is characterized by enclosed and panoramic landscape types. The variation in landscape type is largely based on the location in the viewshed and the viewer position. The perception of landscape scale is similarly variable, depending largely on the predominant landscape type. Visual resources of the analysis area are described below. A more detailed assessment is provided in Appendix 3F.

The Salmon Falls Creek Reservoir viewshed is bordered by the north/south trending mountains to the east, and by the steep canyon walls and vertical cliffs of China Mountain to the west. Although the surrounding landscape imparts elements of enclosure to this landscape, the Salmon Falls Creek Reservoir serves as a strong focal feature, particularly when viewed from higher elevations located within the project area. Downriver (north) of the reservoir, Salmon Falls Creek travels through the deeply incised canyon of the Salmon Falls Creek SRMA. This feature, though not readily seen from ground-level, creates a strong axis when viewed from more superior viewer positions located in the analysis area.

The US-93 viewshed is located in a low-lying valley, situated between north-south trending mountain ranges. The configuration of the mountain ranges results in an enclosed landscape when viewed to the east and west, and more panoramic landscape character when viewed to the north and south. US-93 is located approximately 10 miles from the project area, in the background (B) distance zone.

The Monument Springs Road viewshed is characterized by gently rolling landscape, set high above the surrounding Snake River Basin and Salmon Falls Creek drainage. Although expansive views to the east impart a largely panoramic quality to the landscape, a strong element of enclosure is created by the higher elevation peaks and hills located to the west, and the silhouette of the cliff edge to the

east. The abrupt change in landscape type from enclosed to panoramic creates contrast in the scale of the landscape when viewed from the west, and enhances the north-south axis of the cliff edge.

The landscape character of the southern OHV viewshed is characterized by large-scale panoramic qualities to the north and south; however, large rock features and drainages are common and result in a reduced landscape scale in localized areas. Lands located to the southwest of the project area are characterized by rugged north-south trending mountains that appear sequential when viewed from the superior position of project area.

Visual resources for the analysis area are summarized below in terms of the predominant form, line, color, and texture of landform, vegetation and structures. Additional elements of the overall aesthetic are discussed including, movement, seasonality, and predominant atmospheric conditions. More specific information on visual resources specific to each viewshed area is provided in Appendix 3G.

Landform

The landforms located within the analysis area are the result of geologic uplift and erosion. The dominant landform is a north-south trending linear block-fault that rises gradually from the west to crest at China Mountain, and descends precipitously to the east to meet the relatively flat plateau known as Browns Bench. When viewed from on top of this feature, landforms are dominated by rolling hills and canyons draining to the east. When viewed from US-93, or the Salmon Falls Creek Reservoir, this landform creates a strong contrast in both elevation and dimensional mass to the surrounding lowland. The scale of this landform is large, and is a dominant focal point when viewed in the context of the expansive lowlands of the Snake River plain and Salmon Falls Creek river valley. A secondary, but still dominant feature is Salmon Falls Creek Reservoir, a large reservoir formed by water impoundment by Salmon Falls Creek Dam. This water feature is distinct (focal) and contrasting against the surrounding landscape, particularly when viewed from higher elevation areas within the project area.

The mountains and valleys of the area are dissected by erosional features that form swales, steep drainages, and canyons. Dominant lines created by landforms appear straight and angular, with prominent horizontal orientation. Exposed rock faces and outcrops are common in this landscape, particularly along mountain escarpments and canyon walls. Rock outcrops often display bands of stratified rock ranging in color from brown/grey to brown/red, particularly visible when viewed from a distance. From the lower elevations, cliff and mountain features appear massive and steep. These features tend to dominate the horizontal and the shallow diagonal lines of the horizon. When viewed from more proximate locations within the project area, the canyons impart dramatic angular lines and a sense of depth.

Vegetation

Vegetation in the analysis area is dominated by sagebrush shrublands, particularly at the lower elevations along Browns Bench. These low statured and regularly spaced shrublands are medium textured and display muted hues of olive green, yellows, and browns across the flats and gentle hills

of the project area. Trees and shrubs intermingle with the sagebrush at higher elevations increasing color and texture contrasts compared to the monotone flats below. Sagebrush types are interrupted or replaced entirely by pockets of dark green trees and shrubs that congregate along drainages or on sheltered slopes where snow lingers late into the season. These subalpine communities are irregularly spaced, coarse textured areas that display a variety of greens, yellows, or reds, depending on the season. Expansive vistas are common along the upper elevations where the visual proportions of features below are diminished due to viewing angle.

Structures

The analysis area contains little development. Existing structures are limited to isolated residences, farms and associated features (e.g., irrigation features), commercial buildings, and roadways. US-93 is characterized as a double lane paved road with shoulders and occasional passing lanes. It is the largest and most heavily used roadway within the analysis area, and contains views of the project area from some locations. Salmon Falls Creek and Cedar Creek reservoirs contain recreational structures (e.g., picnic sites, boat ramps or docks, restrooms). Salmon Falls Creek Reservoir also contains developed campsites to support overnight stays. The project area can be seen from Salmon Falls Creek Reservoir at some locations. The northern inbound haul route can be seen from Cedar Creek Reservoir. Portions of the China Mountain Wind Project would be visible from portions of US-93 and Salmon Falls Creek Reservoir. Artificial light in the analysis area is limited to isolated residences, periodic headlights on travel routes, and the distant glow of the City of Twin Falls to the north.

The project area is largely undeveloped. Existing structures include both primitive and maintained dirt roads and fences that are linear and horizontal. Two roadways located within the project area are maintained: Monument Springs Road, which approaches the project from the north, and Road 1222, which approaches the project from the south. Monument Springs Road creates a bold, gently curving line that bisects the project area in the northern portion. Road 1222, though maintained, is characterized by a softer line, whose curvature imparts a weaker contrast to the surrounding landscape. Off-highway vehicle tracks are present through the project area; however, the network of lines created from the track appear largely absorbed into the surrounding landscape. Less common structures include three parallel electrical transmission lines and poles located to the east of the southern portion of the project area, transmission tower radio broadcasting antennae, and meteorological towers sited within the project area. The transmission towers are dark to light grey galvanized steel, with a smooth, flat texture. The towers vary in size and though sub-dominant to the panoramic landscape, create a vertical line that is apparent. Artificial lights present within the project area are limited to the single vacation residence located on private lands. Existing metrological towers do not contain any lighting. The overall aesthetic of the landscape is still, quiet, and natural. Movement is limited to occasional vehicles or OHVs.

Viewer Sensitivity

The primary viewer groups within the analysis area include surrounding residents, roadway travelers, and recreators. The area is also a valued cultural resource site (Section 3.3.1). Residents are dispersed and view the area from a predominantly Foreground/Middleground (3 to 5 miles) distance, with

variable angles of observation. Roadway travelers include commuters and tourists traveling on US-93 between Twin Falls and Jackpot, and local traffic along Three Creek Road. Recreators are centered on Salmon Falls Creek Reservoir, Cedar Creek Reservoir, and the higher elevation portions of the project area. Primary recreation activities in the area include fishing and other water-based activities, hunting, dispersed camping, OHV use, and pleasure driving (Section 3.4.1). Recreation activities within the analysis area are concentrated in the spring, summer, and fall seasons, with little use of the area during winter months. Due to its cultural value, high recreational use, and the proximity of travel routes, viewer sensitivity in the analysis area is assumed to be high among all user groups.

Seasonality

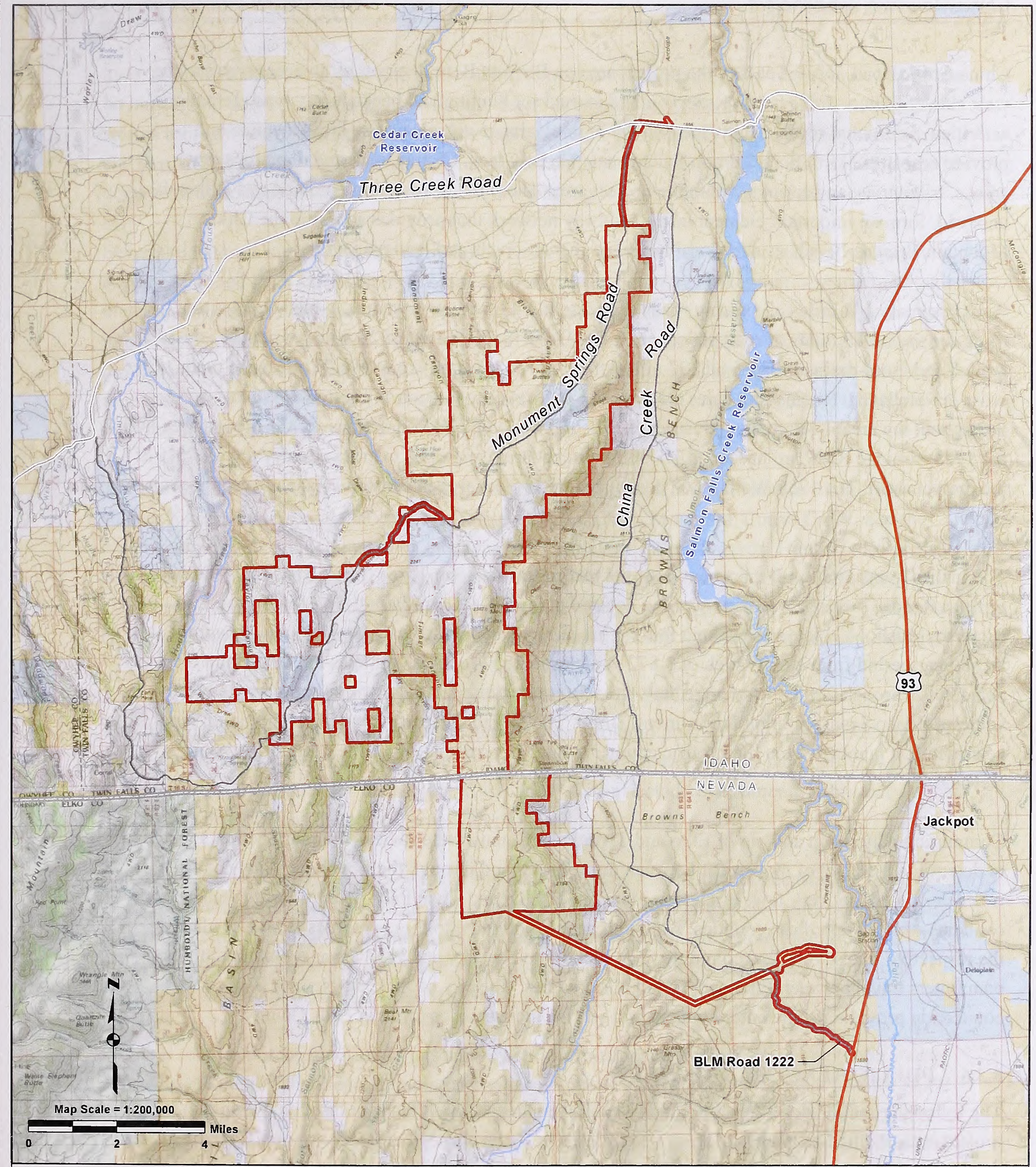
A high degree of seasonality exists within the project area. The high elevation setting results in a dramatic change in the aesthetic of the area during winter months. Conditions at this time are characterized by contiguous snow cover, with variable and unpredictable snow drifts that preclude access by high clearance vehicles and snowmobiles (URS, 2010). The lack of recreational use and travel during this time enhances the still, quiet, and natural aesthetic of the area. In contrast to the summer season, in which conditions are typically dry with reduced visibility due to haze, winters are characterized by clear days and improved visibility. Such conditions shift elements of line, color, and texture to a predominantly smooth, white landscape, lacking the linear network of OHV trails. The bold line of Monument Springs Road is also eliminated as this roadway is not plowed during the winter months.

3.3.5 TRANSPORTATION AND ACCESS

Three Creek Road originates at Rogerson, Idaho and provides the primary access to the project area (Figure 3.3.5-1). Three Creek Road is a two-lane county highway with paved asphalt and varying shoulder widths. It is maintained by Twin Falls County and is plowed for snow removal during the winter. Three Creek Road also provides access to Salmon Falls Creek Reservoir and the BLM Lud Drexler Campground. Three Creek Road is single-lane over the top of the Salmon Falls Creek Dam and requires vehicles to wait at each end for safe passage in one direction.

From Three Creek Road, the Monument Springs Road provides the main access into the project area from the north. Monument Springs Road is a gravel road that is managed and maintained by Twin Falls County. It is not plowed for snow removal in the winter.

Access to the project area from the south is by a partially graded BLM road (Rd 1222) suitable for high-clearance vehicles that branches from US-93 approximately 5 miles south of Jackpot, Nevada. This road is partially maintained. As this road climbs to the top of China Mountain, it becomes a primitive road or two track (Figure 3.3.5-1).



LEGEND

Project Area Boundary

Land Status (Ownership)

BLM
Private
USFS
State

Road Types

Highway
Road (Paved)
Road (Native Surface)

Figure 3.3.5-1. Roads and Land Status

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China Creek Road, located east of the project area on Browns Bench, serves as an access road to the west side of Salmon Falls Creek Reservoir and is used for hunting and backcountry type recreation activities. Additional roads, accessible only by high-clearance vehicles, criss-cross the area and provide access to North Fork Salmon Falls Creek, Cedar Creek, China Creek and numerous other creeks, tributaries, and springs within the project area. These roads are not maintained and although unpaved, form an important element of the roadway network that provides access to the China Mountain/Browns Bench area for local ranchers, recreationists and land managers.

Approximately 144 miles of existing roads are present within the project area, which equates to a route density of 2.9 miles of road per square mile. These roads consist of 22 miles of county and other graded and cross-drained roads and 122 miles of primitive roads or two tracks. While these roads may cross private lands, fencing and gates are limited and used only to control livestock. Access throughout the area is relatively unrestricted. Off-highway vehicle designations for the project area in the 1987 Jarbidge RMP are limited (10% of the project area) and open to cross country travel (75% of the project area). The 1985 Wells RMP designates the project area in Nevada as open to cross country travel.

The Idaho Transportation Department does not record traffic along Three Creek Road or Monument Springs Road. The closest traffic counter is located along US-93 approximately 0.9 mile south of Rogerson, Idaho. Vehicle travel along this stretch of highway has seen a general decrease over the last 8-year period from a daily high of 3,872 vehicles in 2002 to 3,430 vehicles in 2008. From the years 2002 through 2008, the average daily vehicle count along this segment of highway was 3,704 vehicles (Idaho Transportation Department, 2009). The Nevada Department of Transportation reports near identical numbers from their traffic counter located approximately 1 mile north of Jackpot, Nevada.

Commuting patterns in and out of Elko and Twin Falls County were reviewed under Section 3.3.3.6, to determine the level of movement between the counties and through the Economic Analysis Area. It was determined that very few people commute out of Elko and Twin Falls counties, as the majority of residents work within these counties. Although people commute to these counties from elsewhere in the respective states, very few commute from Idaho into Nevada, and vice versa. A small number of commuters travel between Elko and Twin Falls counties. The city of Jackpot, Nevada is the connection providing some entertainment and service industry jobs to Twin Falls County.

3.3.6 PUBLIC HEALTH AND SAFETY

The following section describes the existing public health and safety risks or hazards within the project area. Public health and safety are considered in terms of the likelihood of injury, illness, or death caused by traveling to and recreating in remote areas with unimproved roads, uneven and steep terrain, unpredictable weather extremes, limited communication, and limited access to emergency services.

Primary access to the project area is via a two lane gravel road maintained by Twin Falls County; secondary access is unimproved and not maintained as discussed in Section 3.3.5. Weather related

hazards include snow, rain, extreme cold and hot temperatures, lightning, and high winds. Roads can be impassable due to winter snow conditions, deep-rutted mud in spring and late autumn, and rain storms throughout the year can render roads impassable. In the summer, unpaved roads become dry and very dusty, causing limited visibility for drivers and possibly increasing the risk of collisions. No documented accident information is available for existing roads in the vicinity of the project area.

Severe rain storms present the risk of lightning strikes to visitors. This risk increases if visitors become stranded from safe shelter. Wildfires can start from lightning strikes, careless use of smoking materials, neglected campfires by visitors, and by parked vehicles if the hot catalytic converter comes into contact with dry vegetation. High winds and dry vegetation contribute to the fast spread and movement of wildfires presenting a serious safety hazard. Fire hazards and management are described in greater detail in Section 3.3.10. High winds can impair safe travel and also increase the risks inherent in exposure to extreme cold temperatures.

The uneven and steep terrain of the project area presents slip, trip, and fall hazards for recreationists such as hikers, hunters, and OHV users. Timber Canyon, China Mountain, Corral Creek, and the eastern project area are dominated by cliffs that present severe falling hazards. Hunting also presents risk of injury from hunting weapons and from the physical strain of retrieving harvested animals. OHV use presents the inherent risk of injury or death to the user from potential collisions, accidents or from becoming stranded if the OHV breaks down after traveling far from their primary vehicle.

3.3.7 HAZARDOUS MATERIALS AND PETROLEUM PRODUCTS

The affected environment for hazardous materials and petroleum products depends on existing transportation access routes and locations where future staging areas, support facilities, new roads, and construction activities for the project would occur. The affected environment for hazardous materials is described as the project area with proposed haul routes.

Hazardous material is defined as any material that, because of its quantity, concentration, or physical or chemical characteristics, may pose a real hazard to human health or the environment. Hazardous materials include flammable or combustible material, toxic material, poisonous and infectious materials, corrosive material oxidizers, aerosols, biohazards and compressed gasses (American Society for Testing of Materials [ASTM], 2008).

Possible sources of hazardous materials activity include: incidence of illegal dumping (solid waste makes up the bulk of the illegal dumping activities on public lands); land actions that involve ROW leases and permits (e.g., gasoline and natural gas pipelines, telecommunication sites, military sites, and transportation facilities); weed and insect control (i.e., herbicides and pesticides); activities that may include, but are not limited to, petroleum products (e.g., fuels and lubricants), solvents, paints, explosives, and cleaning chemicals; and the minerals program.

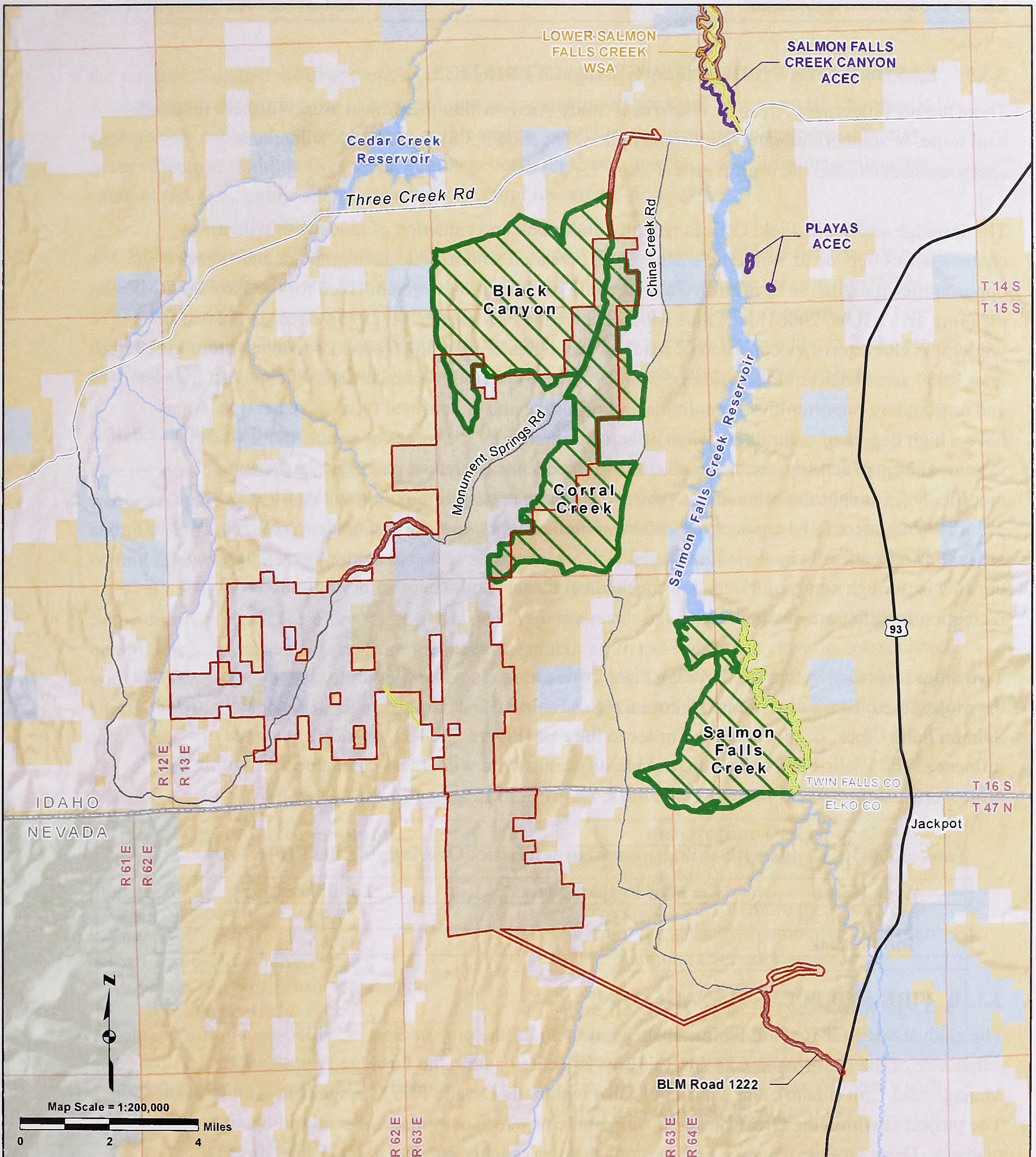
The hazardous material specialist for the Jarbidge Field Office reported no knowledge of problematic dumping in the hazardous analysis area (Fuller, 2009). In addition, a hazardous wastes and materials assessment was conducted to help identify potential environmental issues located within the project

area and haul routes. A list of the applicable Federal and state agencies and the associated regulatory databases was compiled as specified by the American Society for Testing of Materials E 2247-08 Standard: *Environmental Site Assessments: Phase I Environmental Site Assessment Process for Forestland or Rural Property* (ASTM, 2008). The most current available information was gathered through readily available public sources from the EPA and states of Idaho and Nevada environmental databases and included: (1) known or potential hazardous waste sites or landfills; (2) sites currently under investigation for environmental violations; (3) sites that manufacture, generate, use, store, and/or dispose of hazardous substances or hazardous wastes; and (4) sites with recorded violations of regulations concerning Underground Storage Tanks and hazardous substances or petroleum products. The purpose of this task was to identify database listings present within the project area or on adjoining land that may have the potential to impact the environmental condition. A review of the environmental databases, as specified by American Society for Testing of Materials, did not result in the identification of any listings by either Federal or state regulatory agencies that were located either within the project area, the inbound and outbound haul routes, or within a 1-mile search distance from these areas (URS, 2009).

3.3.8 SPECIAL DESIGNATIONS

There are no areas with special designations, including Areas of Critical Environmental Concern, Wilderness Study Areas, or Wilderness Areas, within the project area, northern inbound haul route or southern inbound haul route options. Several specially designated areas occur within several miles of the project area including: Salmon Falls Creek Area of Critical Environmental Concern (3.3 miles to the northeast), Playas Area of Critical Environmental Concern (2.4 miles east), Lower Salmon Falls Creek Wilderness Study Area (4 miles northeast), and the Jarbidge Wilderness (14 miles southwest). Given the distance of these designated areas, they are not carried through the analysis (Figure 3.3.8-1). Lands with wilderness characteristics overlap the project area, as described in Section 3.3.9.

There are no designated Wild and Scenic Rivers within the project area, southern inbound haul route options, or northern inbound haul route. In preparation of the Draft RMP, the Jarbidge Field Office conducted an inventory of all river segments previously considered ineligible for inclusion in the National Wild and Scenic River System, in accordance with BLM Manual 8351, Wild and Scenic Rivers, and BLM Handbook H-1601-1, Land Use Planning. River segments may be eligible if they are in a free-flowing condition and exude outstanding natural, cultural, and/or recreational values. After a preliminary evaluation of the free-flowing character and values of each river segment, most segments were determined ineligible and dropped from further consideration. Two eligible segments of Salmon Falls Creek occur within several miles of the project area (Figure 3.3.8-1; BLM, 2009). The upper segment was tentatively classified as recreational and the lower segment as scenic. Given the distance of these eligible segments, they are not carried through the analysis. One river segment that intersects the project area, Rocky Canyon Creek, qualified as eligible and was tentatively classified as wild due to its free-flowing condition and outstanding wildlife value (Figure 3.3.8-1). Further evaluation, study, and review would determine if it is suitable. Approximately 0.75 mile of Rocky Canyon Creek is located within the project area and is headwaters to the North Fork of Salmon Falls Creek.



LEGEND

- Project Area Boundary
- Area of Critical Environmental Concern (ACEC)
- Wilderness Study Area (WSA)
- Lands with Wilderness Characteristics
- Wild and Scenic River (WSR) Eligible

Land Status (Ownership)

BLM | Private | State | USFS

Figure 3.3.8-1. Special Designations and Lands with Wilderness Characteristics

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3.3.9 LANDS WITH WILDERNESS CHARACTERISTICS

There are no Wilderness Areas or Wilderness Study Areas within the project area, Northern inbound haul route, or southern inbound haul route options (Section 3.3.8). Lands with wilderness characteristics overlap the project area (Figure 3.3.8-1).

The Jarbidge and Wells Field Offices recently undertook an evaluation of lands with wilderness characteristics outside of Wilderness Study Area. Data on naturalness, development, and opportunities for solitude or primitive and unconfined recreation were collected for the Jarbidge RMP planning area (BLM, 2008) and China Mountain area in Nevada (BLM, 2010). Areas evaluated for wilderness characteristics consisted of roadless areas greater than 5,000 acres or roadless areas greater than 1,000 acres adjacent to a Wilderness Study Area. Wilderness characteristics include naturalness and outstanding opportunities for solitude and primitive and unconfined types of recreation. Areas have a high degree of naturalness when affected primarily by the forces of nature and where the imprint of human activity, such as roads, trails, fences, infrastructure, and other landscape modifications, is substantially unnoticeable. Areas have outstanding opportunities for solitude or primitive and unconfined types of recreation when the sights, sounds, and evidence of other people are rare or infrequent; where visitors can be isolated, alone, or secluded from others; where the use of the area is through non-motorized, non-mechanical means; and where no or minimal developed recreation facilities are encountered.

Two areas identified within the Jarbidge Field Office as lands with wilderness characteristics overlap the project area: Black Canyon and Corral Creek (Table 3.3.9-1; Figure 3.3.8-1). One additional area, Salmon Falls Creek, occurs about 2.7 miles to the east (Figure 3.3.8-1), outside of the area of influence. The Wells Field Office did not identify lands with wilderness characteristics within the project area.

Table 3.3.9-1. Lands with Wilderness Characteristics Overlapping the Project Area.

Area Name	Acres in Project Area	Total Acres
Black Canyon	1,430	7,994
Corral Creek	2,852	5,864

3.3.10 FIRE AND FUELS MANAGEMENT

The analysis area for fire and fuels management includes the project area and a 250-foot buffer on either side of the haul routes. The analysis area is located within the Jarbidge Foothills Fire Management Unit (Idaho), and a portion is also within the Delano Fire Management Unit (Nevada). The project is within the Great Basin physiographic province comprised of semiarid uplands and high plateaus. These areas experience fire ignitions that can quickly escalate to large fires due to a combination of weather, topography, and fuel characteristics.

The fire season typically starts in May, ends in October, and peaks in late July. Summers are hot and dry with high temperatures in the 90 to 95 degrees Fahrenheit range and relative humidity lingering between 10 to 25 percent for extended periods. These conditions decrease fuel moisture throughout

the summer. Summer weather patterns occasionally bring storm fronts with dry lightning and high winds capable of igniting fire in remote areas and spreading it rapidly. The present BLM policy is to aggressively suppress all new fires on or threatening public lands; less than full suppression may occur whenever multiple fires ignite simultaneously. In these situations, priority is determined by value-at risk (i.e., public safety, structures, cultural resources, etc.).

The BLM cooperates with adjacent landowners on a case-by-case basis to reduce fire hazards where efforts are cost effective and the results would benefit the BLM fire management program (BLM, 1987). In the following sections, fire ecology and history, including historic fire regimes and Fire Regime Condition Class, are discussed to create a picture of the existing fire conditions in the project area and along haul routes and also to develop a basis for fire management impact analysis.

3.3.10.1 Fire Regimes

Fire regimes associated with the major vegetation cover types have been documented in terms of fire frequency and fire severity (i.e., percent of dominant overstory vegetation removed). Table 3.3.10-1 classifies the vegetation communities and historic fire regimes in the project area. These vegetation communities have been combined into vegetation groups, for purposes of analysis (Section 3.2.1).

Some departure from these fire regimes has occurred as a result of changes to native vegetation community structure and current fire management practices. In general, lower elevations associated with the project area and haul routes are experiencing encroachment of annual grass types that tend to shorten fire return intervals. Fire suppression has lengthened fire return intervals in the mid to upper elevations.

Table 3.3.10-1. Historic Fire Regimes of the Project Area and Inbound Haul Routes.

<table>
<tr><th>Vegetation Community</th><th>HFR[1]</th><th>Fire Regime Description[2]</th></tr>
<tr><td>Aspen
Deciduous Mountain Brush</td><td>I</td><td>Fire frequency of 0-35 years with low to mixed severity.</td></tr>
<tr><td>Black Sagebrush
Low Sagebrush
Curl-leaf Mountain Mahogany</td><td>III</td><td>Fire frequency 35 to more than 100 years with mixed severity that removes less than 75% dominant overstory vegetation.</td></tr>
<tr><td>Mountain Big Sagebrush/ Bluebunch Wheatgrass-Idaho Fescue</td><td rowspan="3">IV</td><td rowspan="3">Fire frequency 35 to 100 years with high fire severity that removes over 75% of the dominant overstory vegetation.</td></tr>
<tr><td>Evergreen Mountain Brush</td></tr>
<tr><td>Wyoming Big Sagebrush</td></tr>
<tr><td>Mountain Big Sagebrush/ Idaho Fescue</td><td>V</td><td>Fire frequency of more than 200 years with high (stand replacement) severity.</td></tr>
</table>

[1] HFR – Historic Fire Regimes
[2] **Sources:** Brown & Smith, 2000; BLM, 2010.

3.3.10.2 Fire Regime Condition Class

Information used to determine the Fire Regime Condition Class within the project area was taken from the South Central Idaho Fire Planning Unit Twin Falls District Fire Management Plan (BLM, 2005) and the Northeastern Nevada Fire Planning Unit Elko District Fire Management Plan (BLM,

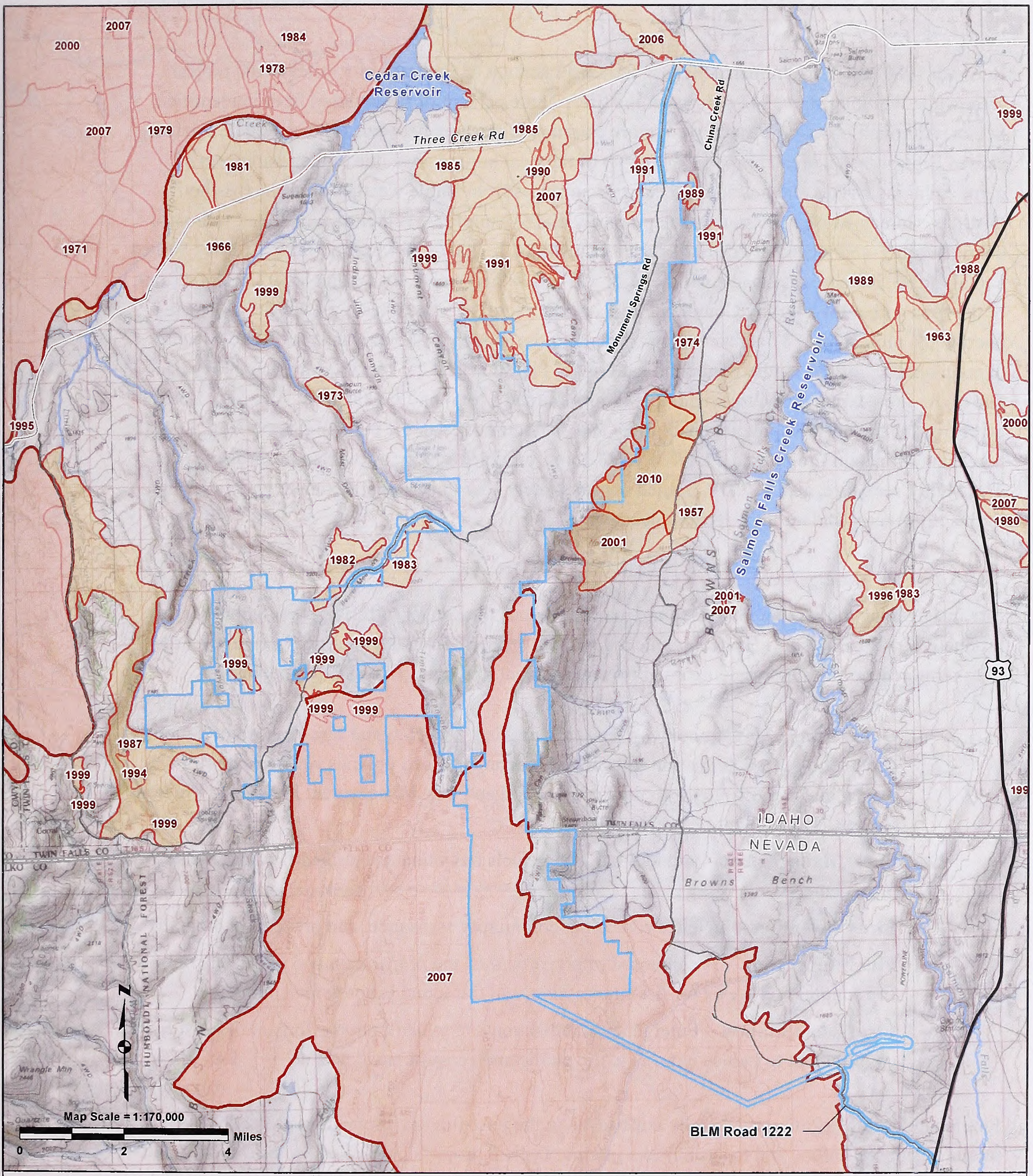
2004). National and state BLM fire policy requires current and desired resource conditions related to fire management be described in terms of three condition classes. These condition classes are referred to as Fire Regime Condition Classes which is a classification of the amount of departure from the historic fire regime.

- **Fire Regime Condition Class 1** – fire regimes in this class are within the historical range. The risk of losing key ecosystem components from the occurrence of fire remains relatively low. Maintenance management such as prescribed fire, mechanical treatments, or preventing the invasion of non-native species, is required to prevent these lands from becoming degraded. There are no lands within the Jarbidge or Delano Fire Management Unit within this classification.
- **Fire Regime Condition Class 2** – Fire regimes in this class have been moderately altered from their historical range by either increased or decreased fire frequency. A moderate risk of losing key ecosystem components has been identified on these lands. To restore their historic fire regime, the lands may require some level of restoration through prescribed fire, mechanical or chemical treatments, and subsequent reintroduction of native plants. Approximately 71 percent of the analysis area is classified in this class.
- **Fire Regime Condition Class 3** – These lands have been significantly altered from their historical range. Because fire regimes have been extensively altered, risk of losing key ecosystem components from wildland fire is high. These lands are at the most risk of ecological collapse. To restore their historical regimes, before prescribed fire can be utilized to manage fuel or obtain other desired benefits, the lands may require multiple mechanical or chemical treatments, or reseeding. Approximately 25 percent of the analysis area is within this condition class and most of this area is native and non-native perennial grasslands.

The remaining 4 percent of the analysis area is not classified within a Fire Regime Condition Class as most of it is either barren, sparsely vegetated, or a riparian type area. Riparian covertypes have not been assigned a Historic Fire Regime or Fire Regime Condition Class rating as they typically mimic the surrounding vegetation covertype fire regime (BLM, 2005).

3.3.10.3 Fire History and Data

The following fire history data is taken from (1957 – 2007) BLM and Southern Idaho Fire Center records of fire events within 5 miles of the project area, an area consisting of 101,774 acres. During the 50-year period, 35 separate fires burned a total of 87,040 acres of the area. A total of 4,413 acres has burned more than once. Fire occurred at least once in 23 of 50 years, suggesting a relatively frequent fire return interval. Fire extents have been highly variable, ranging from zero acres, in years when fire was completely absent, to 47,350 acres during the record 2007 Murphy Complex Fires. Average mean fire size in the area from 1957 to 2007 was 1,457 acres. These figures reflect all burned acres, regardless of land ownership. Figure 3.3.10-1 displays the fire history for the project area and vicinity from 1982 to 2007.



L E G E N D

- Project Area Boundary
- 2007 Murphy Complex Fire Boundary
- Year Other Wildland Fire Boundaries

Note: The year each fire occurred is indicated on the map.

Figure 3.3.10-1. Fire History

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Between 1980 and 2007, human activities started 54 percent of fires within 5 miles of the project area, while lightning started 42 percent of the fires. Three percent of fires started from unidentified causes. Although human fire starts were more common in the area between 1980 and 2007, lightning caused fires burned a greater proportion (68%) of the total burned area, due to the remoteness of many lightning strikes and multiple fire start occurrences from single weather events across both Districts. Human-caused fire starts were primarily due to campfires, vehicles, equipment, railroads, debris burning, and incendiary devices such as fireworks. In 2007, the Murphy Complex Fires burned a total of 593,549 acres and had a perimeter of 295 miles (Figure 3.3.10-2). The Scott Creek fire, one of the fires within the Murphy Complex Fires, burned a total of 58,467 acres, of which 7,380 acres overlap the project area, 87 acres overlap option 1 of the southern inbound haul route, and 84 acres overlap option 2 of the southern inbound haul route; Figure 3.3.10-2). The Elk Mountain Fire, also one of the fires within the Murphy Complex Fires, burned a total of 373,000 acres, of which 1,057 acres overlap the northern inbound haul route and 597 acres overlap the outbound haul route. In 2010, the China Mountain fire burned a total of 1,713 acres, of which 313 acres overlap the project area. The Mule Creek Fire, also in 2010, burned approximately 13,745 acres approximately 12 miles east of the project area and north of Jackpot, Nevada.

3.3.10.4 Fire Management

Fire management utilizes an integrated approach to reduce the danger to fire fighters, improve the productivity of public lands, protect public and private property from devastating fire and, over the long-term, reduce fire suppression costs. Fire management integrates five main components:

- **General Fire Management** – National Fire Plan. The National Fire Plan is not a singular document, but a compilation of concepts, documents, and policies which guide fire management and began with the Federal Wildland Fire Management Policy and Program Review (Department of Interior, 1995).
- **Fuels Management** – Includes hazardous fuels reduction, prescribed fire, and fuels management.
- **Fire Prevention** – Includes education, community assistance, and prevention programs.
- **Fire Suppression** – Is composed of preparedness, the preparation and management of fire suppression crews for fire suppression, and the actual suppression component.
- **Fire Rehabilitation** – Emergency stabilization and rehabilitation efforts in the post fire environment to reduce hazards to the public and ecosystem values.

Fire rehabilitation efforts are generally undertaken in the post-fire environment to protect property, public health and safety, and to sustain ecosystems. Typical projects involve soil stabilization, flood control, and rehabilitation of vegetation structure and function in an attempt to keep cheatgrass and other undesirable plants out of disturbed areas. Existing data indicate that a total of 1,225 acres of the project area were seeded using aircraft as a means to broadcast sagebrush seed. Treatments within 5 miles, including the 1,225 acres already mentioned, total approximately 14,500 acres since 1999. The majority of these treatments occurred as part of the Murphy Fire Burned Area Rehabilitation Plan.

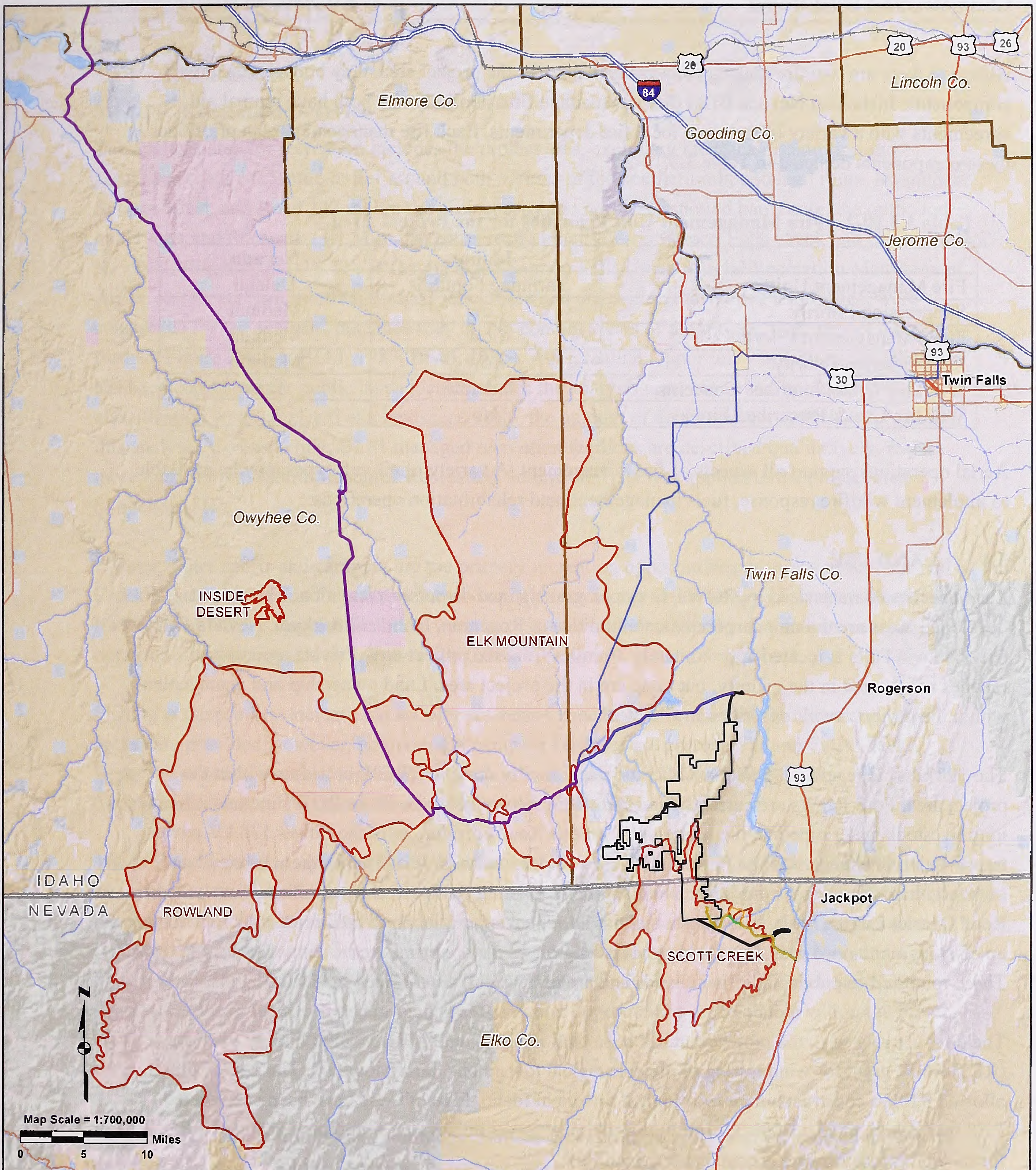

Figure 3.3.10-2. Murphy Complex Fires Overview

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Although there are two fire management plans that cover the project area, they both share similar components. Idaho and Nevada BLM districts manage fires similarly and both have mutual aid agreements with a variety of state and local fire departments. Each fire management plan prioritizes these components depicted in Table 3.3.10-2.

Table 3.3.10-2. Fire Management Unit Priorities for the Project Area.

	Idaho	Nevada
Fire Management Unit	Jarbidge Foothills	Delano
Suppression Priority	Low	Medium
Fuels Management Priority	Low	Medium
Rehabilitation Priority	Low	Medium
Wildland Urban Interface Concerns	Moderate	Low
Wildfire Use & Prescribed Fire	No	Yes

Aerial operations support all aspects of fire management. A variety of aircraft types may be available to implement wildfire response, fuels management, and rehabilitation operations.

3.4 LAND USE

Land uses are characterized by ROWs, livestock grazing, and dispersed recreation. The closest developed areas are the unincorporated communities of Rogerson, Idaho and Jackpot, Nevada. The City of Twin Falls is located approximately 30 miles from the project area. Private agricultural ranches are located in the vicinity, but none are in the project area. Land ownership and management within the project area is described in Chapter 1.

The 1987 Jarbidge and 1985 Wells RMPs did not formally designate ROW corridors within the project area. Four ROWs are currently present within the project area. These ROWs include a 1-mile long livestock water pipeline, the Monument Springs Road corridor, an Idaho Power 138 kV power transmission line, and an Idaho Power 345 kV power transmission line. The northern inbound and outbound haul routes cross public land and are under existing ROWs held by the Three Creek Good Road District and the Twin Falls Highway District. The southern inbound haul route options follow an existing maintained road for a portion of its length and a more primitive existing road for the rest. These routes cross public and private lands and are not currently authorized by a ROW.

The only use related to the project that has been authorized to date is Renewable Energy Systems (RES) ROW grant for wind testing or meteorological towers on China Mountain. The authorization allowed RES to construct six meteorological towers in Idaho. Five of these have been constructed. RES was also granted a ROW for one meteorological tower in Nevada. A complete history of ROWs for meteorological towers is contained in Section 1.2.

3.4.1 RECREATION

3.4.1.1 Recreation Overview

The analysis area for recreation includes the project area, excluding the transmission line and associated road; a 0.5-mile buffer around both options of the southern inbound haul route, Monument Springs Road, and Road 122 within the project area; the northern inbound haul route, the outbound haul route, and the nearby BLM-managed recreation facilities of Salmon Falls Creek and Cedar Creek Reservoir (Figure 3.4.1-1). The BLM-managed Salmon Falls Creek Special Recreation Management Areas, one located within the Jarbidge Field Office and one within the Wells Field Office, were considered for the analysis, but since they do not contain views of the project, they are not discussed further (Figure 3.4.1-1; BLM, 1987; BLM, 1985). A Recreation Opportunity Spectrum classification has been completed for public lands located within the analysis area. However, because the classification was completed at a landscape-scale, the amount of detail was not sufficient for use in this analysis. Consequently, BLM-managed recreation facilities are described qualitatively, and a more quantitative Natural Resource Recreation Setting analysis was applied to the project area (Appendix 3H).

Fishing, water sports and camping are the primary recreation opportunities provided at Salmon Falls Creek Reservoir. Salmon Falls Creek Reservoir is known as a premier walleye fishery in the state of Idaho (BLM, 2010). Day use facilities, water access, and both developed and primitive camping opportunities are provided at Salmon Falls Creek Reservoir.

Fishing is the primary recreational activity at Cedar Creek Reservoir. Day use facilities and water access are provided; however, no overnight camping facilities are present. Salmon Falls Creek Reservoir contains views of higher elevation portions of the project area from some locations and Cedar Creek Reservoir contains views of the northern inbound haul route.

The primary recreation opportunities within the analysis area include hunting, fishing, OHV travel, and both developed and dispersed camping. Pleasure driving on one of the primary access routes to the project area, Monument Spring Road, is also common in the north portion of the project area (URS, 2010a). The southern most portion of the project area, located in the state of Nevada, is also known for its rock hounding opportunities (URS, 2010b). Unlike Salmon Falls Creek and Cedar Creek Reservoirs, no developed or managed recreation opportunities are available within the project area.

3.4.1.2 Access

Access to recreation destinations within the analysis area is limited to several maintained paved and unpaved (dirt) roads. China Creek Road, located east of the project area, serves as a project road for the Salmon Falls Creek Reservoir and to dispersed areas surrounding the Reservoir that are used for hunting or backcountry recreation activities. Several 4-wheel drive roads in the area provide recreation access to more remote waterbodies, such as North Fork Salmon Falls Creek, Cedar Creek, and China Creek. China Creek Road serves as an access road for the Salmon Falls Creek Reservoir.

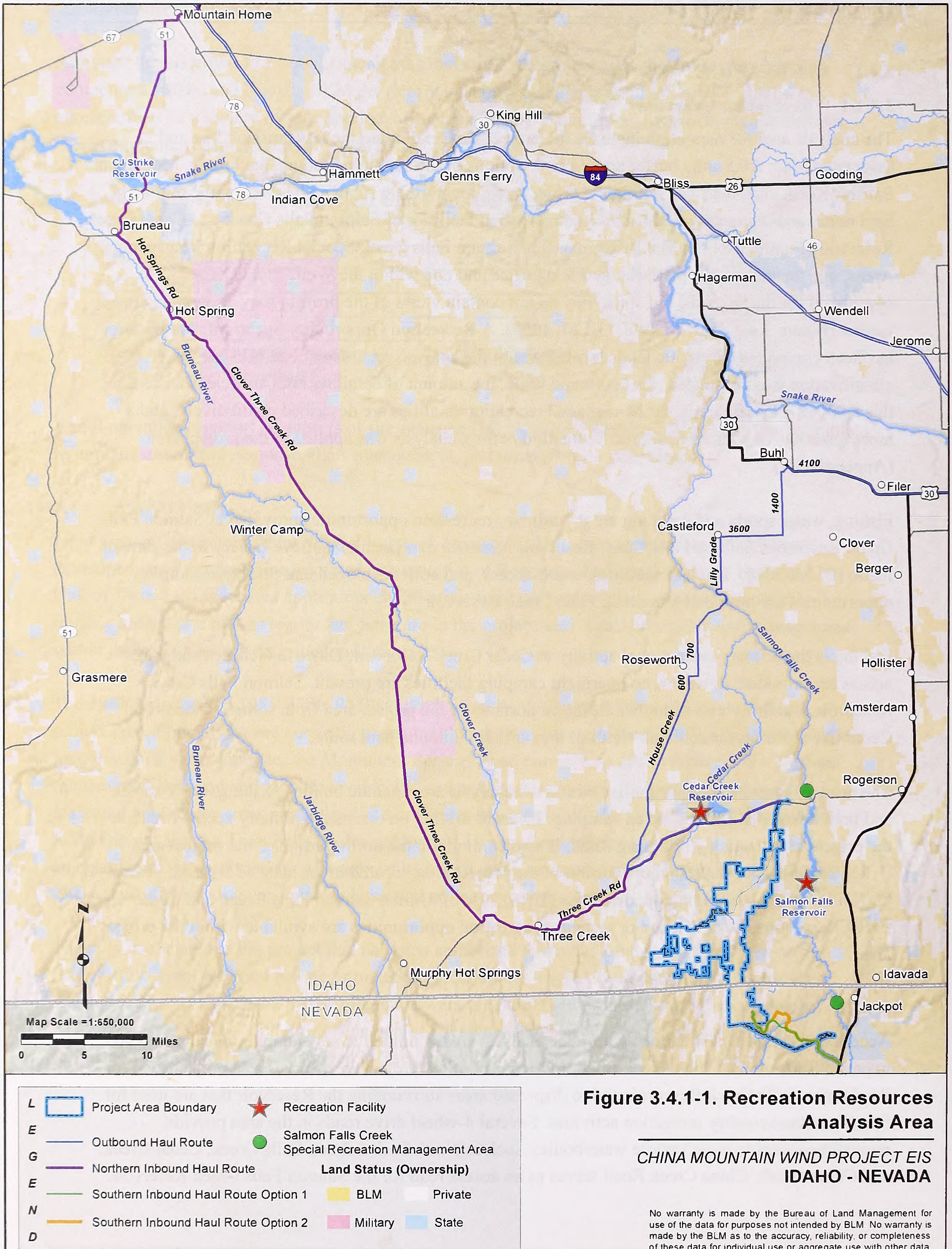

Figure 3.4.1-1. Recreation Resources Analysis Area

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Cedar Creek Reservoir is accessed by Three Creek Road, which is one of the series of existing roads that would be part of the northern inbound haul route.

The project area is accessed from the north by Monument Springs Road via Three Creek Road, and from the south by a network of BLM Roads located off US-93 (including Road 1222; Figure 3.4.1-1). The BLM roadways are passable during non-winter months by high clearance vehicles. Neither Monument Springs Road nor the BLM-managed roads are plowed during winter months, thereby limiting access. Access by snowmobile is limited by the unpredictable snow levels characteristic of higher elevations in the project area (URS, 2010c).

3.4.1.3 Natural Resource Recreation Setting

The existing recreation setting character of the project area and both options of the southern inbound haul route was measured in terms of the physical, social, and administrative attributes. These attributes are defined for the project area in the Natural Resource Recreation Setting analysis (Appendix 3H), and can be used to determine the types of recreation opportunities available. Recreation Setting Characteristics are summarized as follows:

- Physical Setting (Lands and Facilities): The physical setting is measured by 3 criteria: remoteness, naturalness, and facilities. Remoteness is established through determining proximity to varying types of roads ranging from four-wheel drive roads, to major highways. Naturalness is described by the degree of modification (i.e., roads and utility lines) in the landscape. Facilities are evaluated in terms of the amount of administrative, managerial, or commercial facilities present.

- Social Setting (Visitor Use and Users): The social setting is measured by 3 criteria: contact, group size, and evidence of use. Contact is measured by the number of encounters per day on travel routes or at camp sites. Group size is a measure of the number of people recreating in a group. Evidence of use can range from footprints to litter, and would vary based on the amount and type of use in an area.

- Administrative (Administration and Services): The administrative setting is measured by three criteria: mechanized use, visitor services, and management controls. Mechanized use is a characterization of mode of travel (i.e., bikes, OHVs, 2-wheel drive vehicles). Visitor Services are a measure of the types of informational materials available (i.e., maps, brochures, demonstrations). Management controls are determined by the degree of visitor control present at a site.

Based on the attributes listed above, lands within the project area and both options of the southern inbound haul route were classified into one of the following Natural Resource Recreation Setting categories, listed in order of decreasing naturalness, remoteness, use and administrative controls: (1) primitive, (2) back country, (3) middle country, (4) front country, (5) rural, or (6) urban. For example, areas classified as primitive or back country are typically located ½ mile or more from any road, are

characterized by naturally appearing landscapes, and few visitors. Administrative controls are lacking, or available only in the form of basic maps. Areas classified as front country or rural, in contrast, may be located on or near reconstructed roads or even, if classified as rural, a major highway. People are known to frequent these areas, and are observed in large groups. Administrative controls are common and apparent.

The recreation setting and use of the Natural Resource Recreation Setting analysis for the project area and both options of the southern inbound haul route provides a quantitative basis to measure change. No Natural Resource Recreation Setting analysis was conducted for established recreation facilities (i.e. Salmon Falls Creek and Cedar Creek Reservoir) or the northern inbound and outbound haul routes. The rationale for excluding these areas was that no long-term change in access or use is expected to occur because these are existing roads and recreation access points. These facilities and roadways were not classified using the recreation setting characteristics. Instead, the analysis focused on potential change that may occur in the project area and both options of the southern inbound haul routes.

Physical Setting

The physical setting of the project area is naturally-appearing, and is primarily influenced by the existing network of maintained and primitive roads. Encroachment of utility lines and towers near the southern terminus of the southern inbound haul road can be seen; however, it does not overpower the natural landscape features. The project area is bisected in a north/south trajectory by Monument Springs Road, a maintained gravel road accessible by two-wheel drive vehicles. Access to the project area from the south is provided by Road 1222. This roadway is passable only by high clearance vehicles. The roadways within the project area are not plowed in the winter, and, due to unpredictable snow levels, there is limited accessibility during that time (URS, 2010c).

Off-highway vehicle use is common in the project area, as evidenced by the network of well-developed primitive roads. This form of travel is used for both recreational and non-recreational purposes. Recreational use involves touring the open space of the project area, or accessing other recreation opportunities such as hunting or camping. Non-recreational OHV use involves BLM administrative activities and grazing administration by ranchers.

The physical setting of the project area is characterized by both middle and front country recreation settings, despite the more primitive recreational setting that results from the lack of recreational facilities (Figure 3.4.1-2; Appendix 3H). The majority of lands surrounding the project area and the northern portion of the southern inbound haul routes, however, are characterized as middle country. Approximately 4.5 percent of the physical setting of the project area is characterized as back country. The physical setting of the project area and both options of the southern inbound haul routes are summarized in Table 3.4.1-1 below.

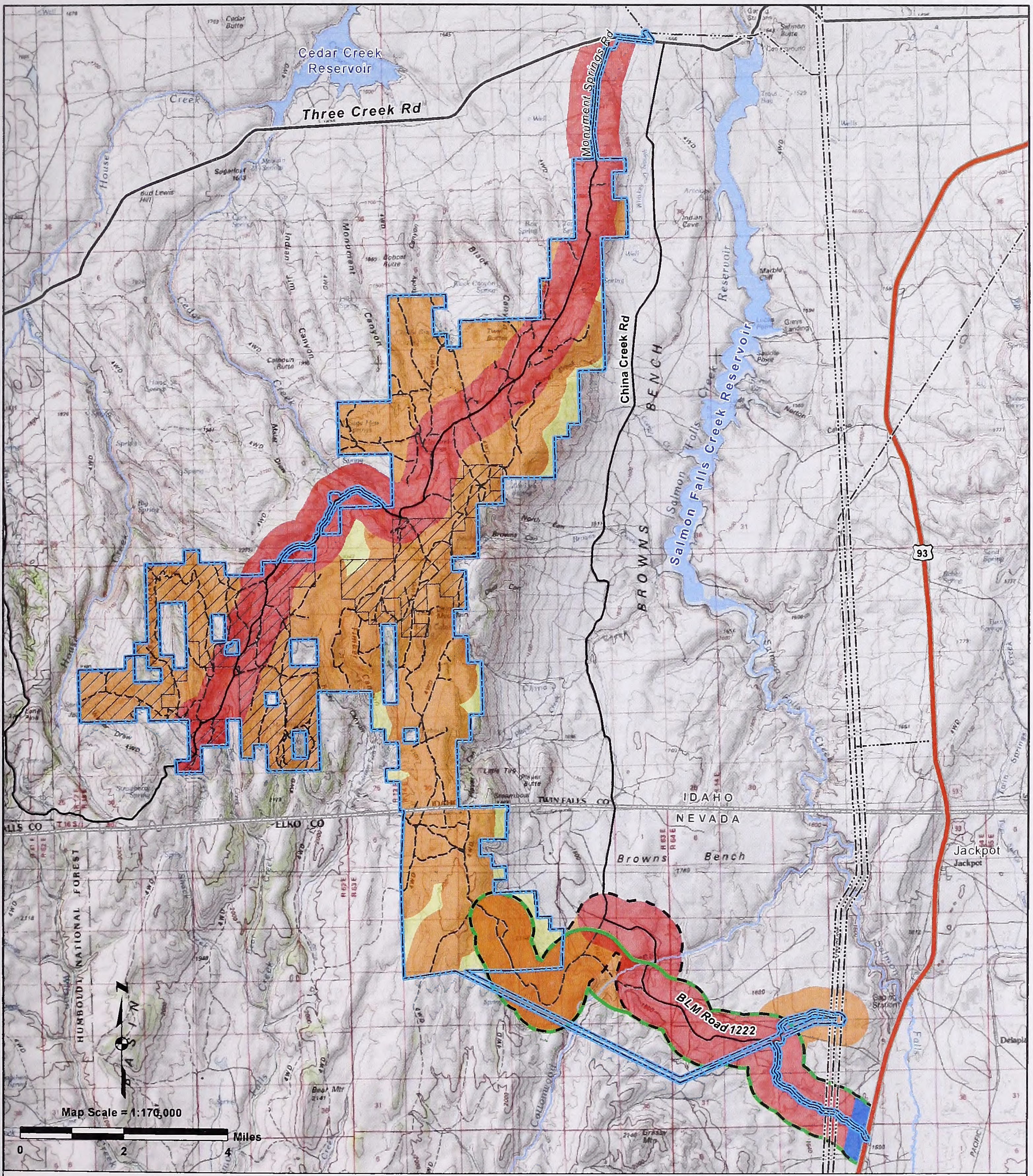

Figure 3.4.1-2. Physical Recreation Setting Characteristics: Includes Remoteness Attribute

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Table 3.4.1-1. Physical, Social, and Administrative Recreation Setting Characteristics of the Project Area and Both Options of the Southern Inbound Haul Route in Acres.

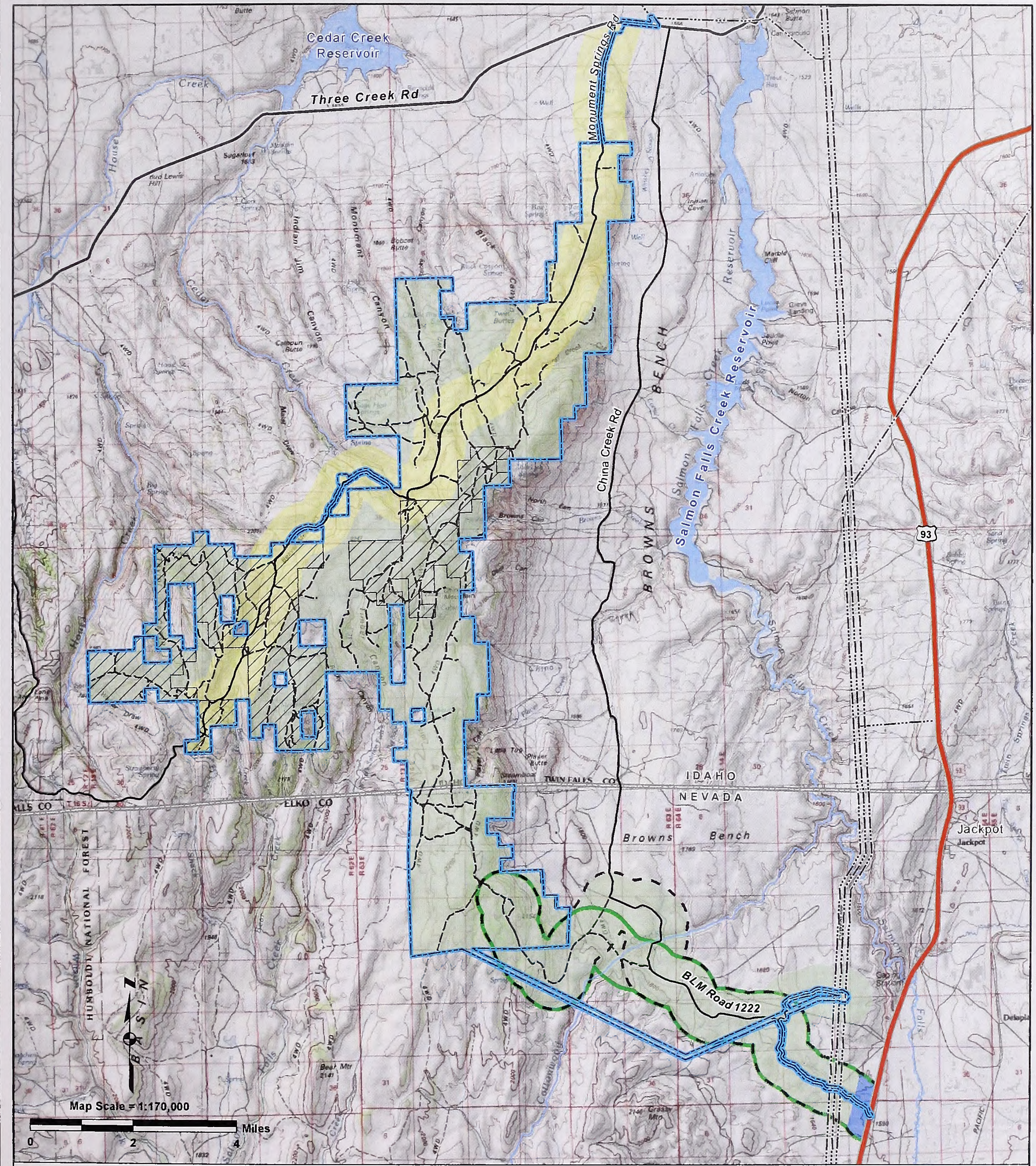
Recreation Setting Characteristics by Area	Primitive	Back Country	Middle Country	Front Country	Rural	Urban
Project Area						
Physical	----	1,690	21,029	10,970	279	----
Social: Non-Hunting Season	22,719	10,970	----	----	279	----
Social: Hunting Season	----	22,719	10,970	----	279	----
Administrative	----	33,968	----	----	----	----
South Haul Route Option 1						
Physical	----	----	2,989	3,638	279	----
Social: Non-Hunting Season	6,627	----	----	----	279	----
Social: Hunting Season	----	6,627	----	----	279	----
Administrative	----	6,906	----	----	----	----
South Haul Route Option 2						
Physical	----	----	3,943	3,637	279	----
Social: Non-Hunting Season	7,580	----	----	----	279	----
Social: Hunting Season	----	7,580	----	----	279	----
Administrative	----	7,859	----	----	----	----

Social Setting: Visitor Use and Users

The southern Idaho/northern Nevada desert is characterized by a sparse human population and large expanses of open space. This area attracts recreation visitors seeking a primitive recreation experience of natural beauty, solitude, and freedom from the restraints of urban environments. For residents of the state of Idaho, preservation of the environment to protect these resources is documented as a primary concern (Public Policy Center, 2008).

The social attributes of the recreation setting of the project area vary seasonally, largely due to the increase in use during hunting season and the decrease in winter months due to inaccessibility. Although hunting seasons vary by type of game and equipment used, for the purposes of this analysis, the hunting season is defined as occurring between September and December. Outside of the hunting season, the majority of the project area is sited on public lands with a primitive recreation setting (Table 3.4.1-1; Figure 3.4.1-3; Appendix 3H). The primitive setting is indicative of the low numbers of people using this resource on a daily basis, and is in sharp contrast to the hunting season, in which escalated use results in a shift of the predominant social recreation setting from a primitive to a back country recreation setting (Figure 3.4.1-4; IDFG, 2008a). This shift is based on the following statistics:

- Mule Deer: A total of 168 hunters for 809 hunter days
- Elk: A total of 17 hunters for 72 hunter days
- Pronghorn: A total of 111 hunters for 465 hunter days



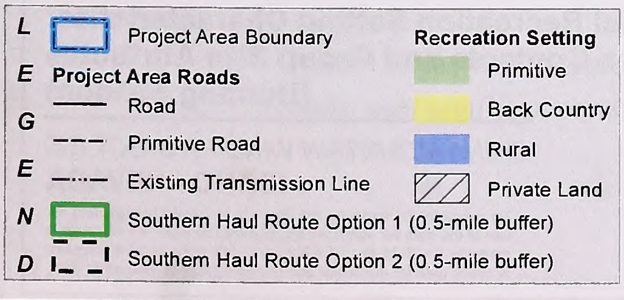


Figure 3.4.1-3. Social Recreation Setting Characteristics: Includes Contacts and Group Size Attributes (Non-Hunting Season)

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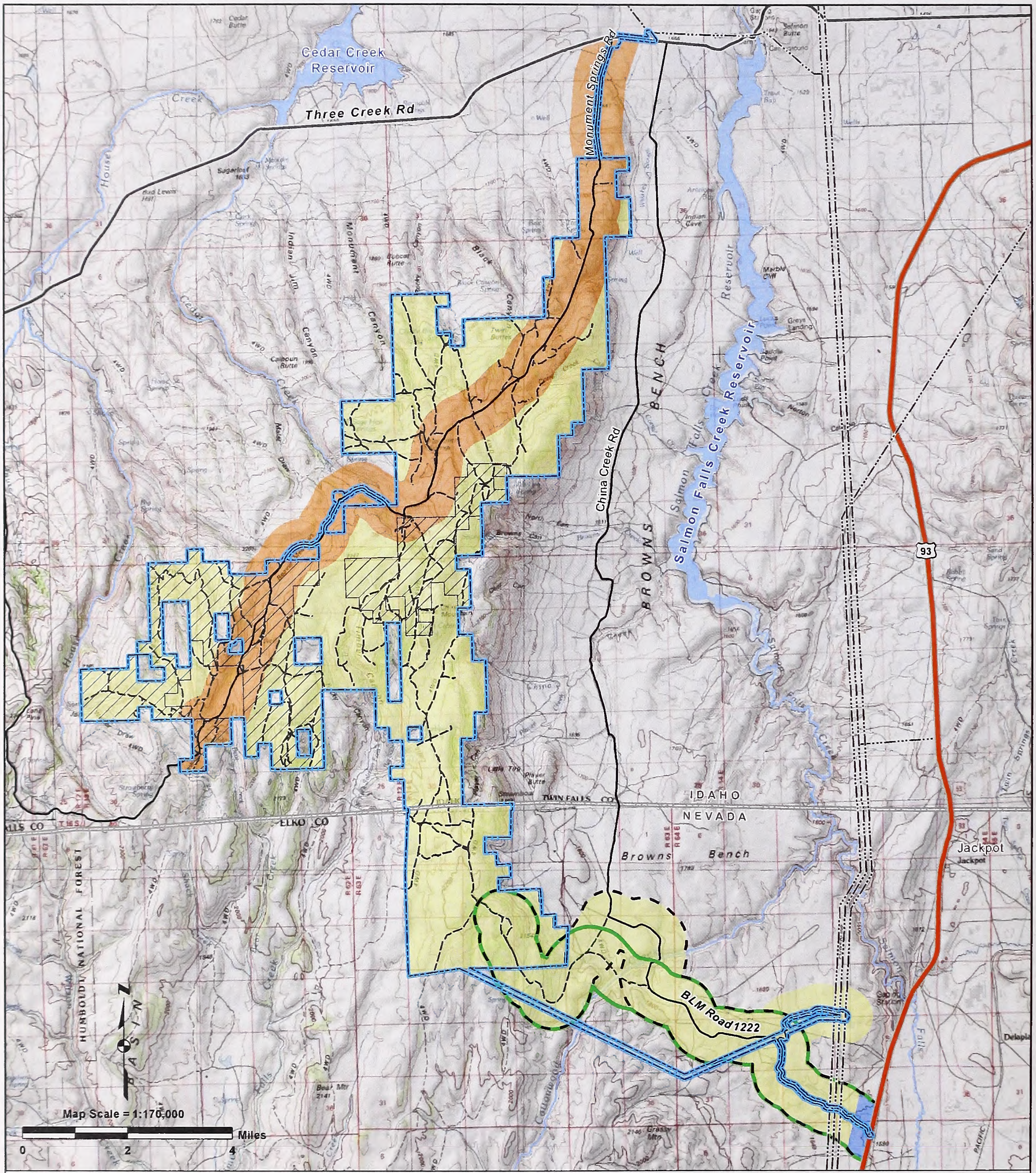

LEGEND

Project Area Boundary

Project Area Roads
- Road
- Primitive Road
- Existing Transmission Line

Southern Haul Route Option 1 (0.5-mile buffer)

Southern Haul Route Option 2 (0.5-mile buffer)

Recreation Setting
- Back Country
- Middle Country
- Rural
- Private Land

Figure 3.4.1-4. Social Recreation Setting Characteristics: Includes Contacts and Group Size Attributes (Hunting Season)

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The back country setting provides an opportunity for hunters to engage in their sport in a low use area. The opportunity to hunt in an area not overcrowded by other hunters has been identified as important to hunters nationally (Responsive Management & National Shooting Sports Foundation, 2009) and is assumed to be shared by local sportsman using the project area. Although the project area can be accessed by reconstructed roads, over 25,000 acres can only be access by OHV or foot travel. In a survey of mule deer hunters in the state of Idaho conducted by Sanyal et al. (2007), foot travel was identified as the most common form of travel used while engaged in hunting. These data, combined with current regulations restricting use of OHVs during hunting (IDFG, 2010), support the assumption that hunters in the project area are traveling by foot in the predominantly middle country physical setting of the project area (Appendix 3H). The social setting of the project area and both options of the southern inbound haul routes are summarized in Table 3.4.1-1.

Administrative Setting: Administration and Services

The administrative setting of the project area spans middle country, back county, and backcountry/ primitive recreation settings (Table 3.4.1-1, Appendix 3H). Middle country attributes are assigned to the project area due to the predominant form of mechanized use within the project area (high clearance vehicles, OHVs). Back country attributes are assigned to the types of visitor services available for the project area, which is limited to basic regional maps. Back country/primitive attributes area assigned to the project area, indicative of the level of management control and enforcement on recreation activities located in the project area. Management controls, described as follows, pertain primarily to hunting and OHV use, as no developed recreation facilities exist within the project area.

Hunting

The portion of the project area sited in Idaho is located in Game Management Unit 47 managed by IDFG, which is used primarily for controlled hunts for mule deer, elk, and pronghorn, with limited permits issued.

Hunting in the portion of the project located in Nevada is managed by the Nevada Department of Wildlife Hunt Unit 074. Both big game (mule deer, elk, and pronghorn) and upland game including sage-grouse and chukar, are hunted throughout this Unit. As in the state of Idaho, the number of permits issued in the state of Nevada fluctuates.

Off-Highway Vehicle Use

Use of OHVs on BLM-managed lands is an "acceptable use of public land wherever it is compatible with established resource management objectives" (BLM, 2001). All public lands are designated in one of the following categories:

- **Open** – Areas would remain open where there is no compelling resource protection needs, user conflicts, or safety issues to warrant limiting cross-country travel.

- **Limited** – Those areas that are restricted in order to meet a specific resource management objective. Restrictions can include vehicle weight, type of vehicle, seasonal limitations, or travel restricted to designated trails.
- **Closed** – Areas are closed to all vehicular use in order to protect natural resources, ensure visitor safety, or reduce conflicts.

The use of OHVs within the portion of the project area located in the state of Idaho is managed as "Open", with the intention of restricting use to existing roadways and jeep roads (BLM, 1987). Use of motorized vehicles while hunting big game and upland game in the Jarbidge Foothills area (Game Management Unit 47) is restricted to "established roadways which are open to motorized traffic and capable of being traveled by full-sized automobiles" (IDFG, 2008b). The Nevada portion of the project area is managed as "open" (BLM, 1985).

Camping

No developed campsites exist within the project area; however, dispersed camping in undeveloped or unimproved locations does occur.

3.4.2 LIVESTOCK GRAZING

Livestock grazing within the vicinity of the project area and haul routes began around the 1870s when ranchers throughout southern Idaho and northern Nevada used the intermixed private, state, and Federal lands to support cattle, sheep, and horses (Blossom et al., 1988). Management directing the number of livestock and season of use was not established during the early settlement period. Enactment of the Taylor Grazing Act of 1934 provided parameters for livestock grazing in the form of grazing allotments, regulation of number and type of livestock (i.e. cattle, sheep, horses), and season of use.

3.4.2.1 Livestock Use of Grazing Allotments

Permits are issued to authorize use on public lands available for livestock grazing. Grazing permits describe the terms and conditions for annual livestock grazing use to achieve management and resource objectives. Mandatory terms and conditions include the allotment(s) to be used, the period-of-use (dates), the number and kind of livestock, and the level of allowed livestock grazing use in animal unit months (AUMs). An AUM equals the amount of forage needed to sustain one cow/calf pair or five sheep for one month. Other terms and conditions may include, but are not limited to, locations of supplements, provisions for temporary delay in grazing use, and management methods used to achieve allotment objectives. Permits generally cover a 10-year period and are renewable if the BLM determines the terms and conditions of the expiring permit are being met.

The analysis area includes the allotments overlapping the project area and inbound haul routes. Permitted use is the number of AUMs that are authorized on a term grazing permit. For the allotments in Idaho and Nevada, permitted use only includes active use because there is no suspended use. The project area encompasses portions of 10 grazing allotments with a total land surface area of about

212,900 acres; of this total, about 31,900 acres (15%) falls within the project area boundary, including 8,940 acres that are in private ownership (Table 3.4.2-1; Figure 3.4.2-1). Nine of the allotments are located within Idaho (Antelope Springs, Bear Creek Idaho, Brackett Bench, Cedar Butte 10, Cedar Creek, House Creek, North Fork Field, Player Butte, and Player Canyon) and one is located within Nevada (Jackpot). A total of 22,491 AUMs are currently permitted for the 10 allotments. When averaged across the total acres of the combined allotments, the current permitted 22,491 AUMs allow for a stocking ratio of about 9.5 acres per AUM.

There are 23 allotments in Idaho that overlap or share a boundary with the northern inbound haul route (Antelope Springs, Bruneau Arm, Bruneau Hill, Canyon Creek, Cedar Creek, Clover Crossing, Crawfish, E&W Deadwood Trap, Flat Top, House Creek, Inside Desert, Juniper Butte, Juniper Draw, Juniper Ranch, Little Grassy/Deadwood, Little House Creek FFR, Pigtail Butte, Signal Butte, South Deadwood, Three Creek #8, Three Creek Blossom PRV, Three Creek/Devil Creek, and Winter Camp). These allotments combined have a total land surface area of about 543,000 acres (Figure 3.4.2-2). A total of 62,689 AUMs are currently permitted for the 23 allotments. When averaged across the total land surface of the combined allotments, the current permitted 62,689 AUMs allow for a stocking ratio of about 8.7 acres per AUM.

The Jackpot Allotment in Nevada is the only allotment that overlaps both options of the southern inbound haul route. It has a total land surface area of about 74,300 acres. Based on the total land surface, the current permitted 4,551 AUMs allow for a stocking ratio of 16.3 acres per AUM.

Actual use, or the amount of grazing use that actually occurred, and season of use vary annually based on factors such as forage production, resource conditions, wildfire, court decisions, and individual livestock grazing operations. The Jackpot allotment in Nevada has been partially closed to livestock grazing until wildfire rehabilitation objectives are met following the Scott Creek fire of 2007. Several of the allotments within Idaho are subject to reductions in permitted AUMs because of court decisions. Thirteen of the allotments in Idaho (Antelope Springs, Brackett Bench, Bruneau Hill, Canyon View, Cedar Creek, Clover Crossing, Crawfish, Flat Top, Juniper Butte, Pigtail Butte, Three Creek #8, North Fork Field, and Winter Camp) are part of the 2005 Stipulated Settlement Agreement imposing interim grazing measures as a result of lawsuits filed against the Jarbidge Field Office. One allotment (Inside Desert) is subject to interim grazing measures ordered by Magistrate Judge Williams in 2003. In addition, 14 allotments in Idaho (Bear Creek Idaho, Cedar Butte 10, E&W Deadwood Trap, House Creek, Juniper Draw, Juniper Ranch, Little Grassy/Deadwood, Little House Creek FFR, Player Butte, Player Canyon, Signal Butte, South Deadwood, Three Creek Blossom PRV, and Three Creek/Devil Creek) are subject to a 2009 court decision directing the BLM to adjust livestock grazing to maintain and enhance special status species habitat. Table 3.4.2-1 identifies grazing information, including permitted AUMs and season of use, for each of the allotments overlapping the project area.

3.4.2.2 Rangeland Infrastructure

Effective management of livestock grazing is dependent on the use of infrastructure to meet resource objectives. Range improvements include infrastructure used to improve range resources or their use by grazing animals (Valentine, 1989). Infrastructure such as water developments and fences provide a more effective means to control livestock movement and the timing and duration of grazing periods. Fences occur throughout the project area and function to separate allotments or pastures. Roads that intersect fences have either gates or cattle guards in place that deter livestock from crossing the fence line.

Many springs in the project area and near haul routes have been developed for use by livestock. These developments may be as simple as driving a pipe into the slope where a spring occurs. Other spring developments collect water from a spring outlet and pipe it to a trough that is located away from the sensitive riparian area around the spring. Within the project area, spring developments include one reservoir, ten stock water troughs, one pond, and approximately 5 miles of water pipeline (Figure 3.4.2-1).

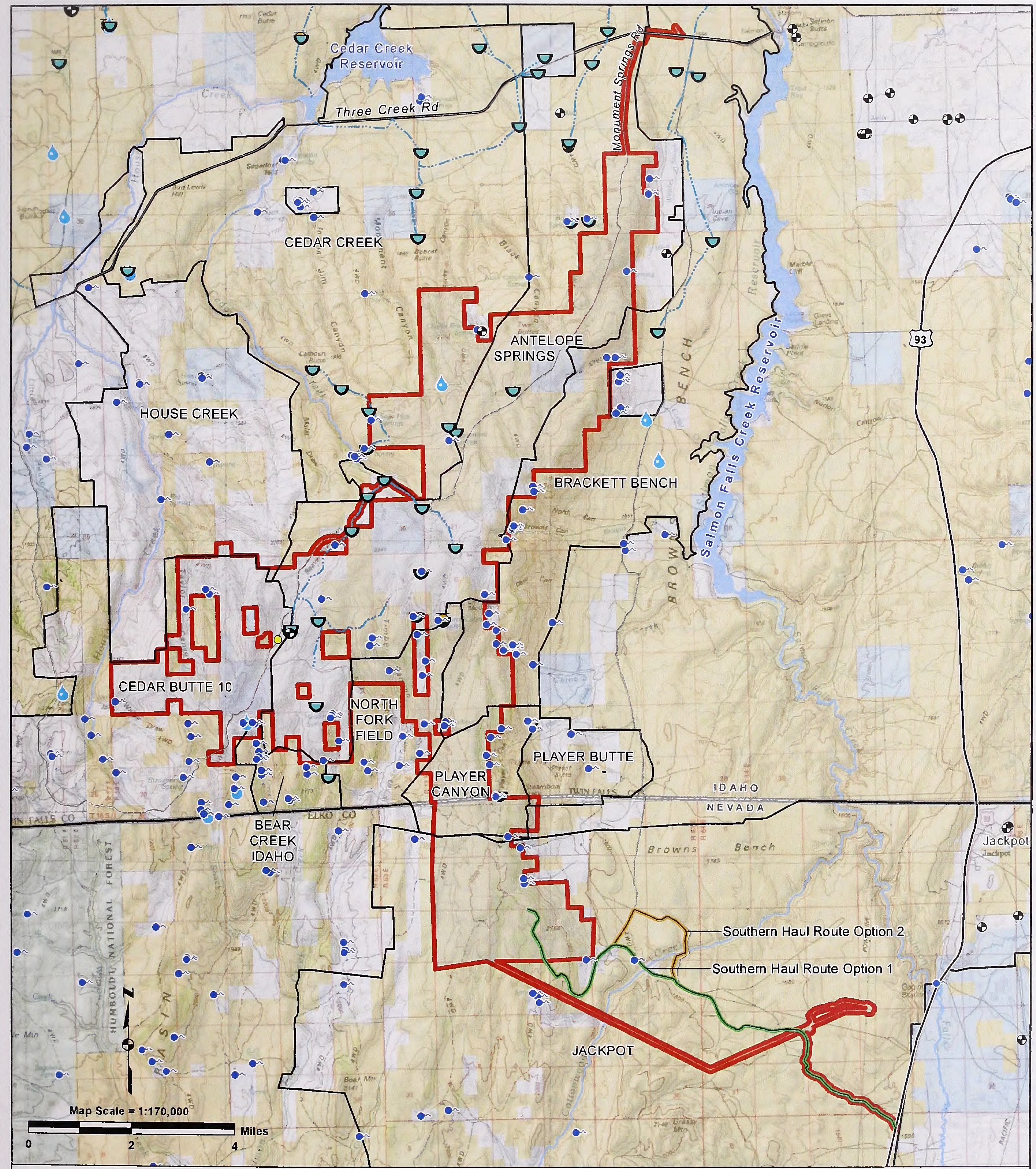
Table 3.4.2-1. Grazing Systems for the Allotments Overlapping the Project Area and Southern Inbound Haul Routes.

Allotment Name & No.	Permit Holder	Allotment Acres	Allotment Acres Overlapping Project Area	Grazing Permit: Class of Livestock	Grazing Permit: Season of Use	Grazing Permit: Permitted AUMs	Pasture	Approximate 2010 Schedule: Grazing Dates/Notes[1]	Approximate 2010 Schedule: Number of Livestock[2]
Jarbidge Field Office, ID									
Antelope Springs[3] (1096)	Antelope Springs Ranch	51,594	13,734	Cattle	03/01-02/28	5,965	South of Road	6/20/2010–6/30/2010	700
								10/15/2010–11/30/2010	
							Monument Springs	6/20/2010–11/15/2010	
							Beaver Meadows	7/01/2010–11/01/2010	
	Guerry, Inc.			Sheep	03/01-02/28	81	South of Road	05/10/2010 – 06/05/2010 One band of sheep to be rotated through these pastures.	1,000
							Monument Springs		
							Beaver Meadows		
Bear Creek Idaho[4] (1026)	Cedar Creek Cattle Co.	1,076	34	Cattle	07/01-09/30	160	Bear Creek Idaho	08/15/2010-09/15/2010	190
Brackett Bench[3] (1008)	Cedar Creek Cattle Co.	20,937	3,278	Cattle	03/01-02/28	2,386	Browns Creek	09/15/2010-10/01/2010	350
							China Creek	07/16/2010-09/15/2010	
Cedar Butte 10[4] (1007)	Guerry, Inc.	14,317	4,282	Cattle	06/01-06/30	891	Line Canyon	08/15/2010-09/20/2010	425
							Bear Creek – Shack Creek	07/15/2010-08/25/2010	
							Deadman Field	09/01/2010-09/25/2010	

Table 3.4.2-1. Grazing Systems for the Allotments Overlapping the Project Area and Southern Inbound Haul Routes (continued).

Allotment Name & No.	Permit Holder	Allotment Acres	Allotment Acres Overlapping Project Area	Grazing Permit: Class of Livestock	Grazing Permit: Season of Use	Grazing Permit: Permitted AUMs	Pasture	Approximate 2010 Schedule: Grazing Dates/Notes[1]	Approximate 2010 Schedule: Number of Livestock[2]
Cedar Creek[3] (1131)	Cedar Creek Cattle Co.	28,093	2,829	Cattle	03/01-02/28	4,421	Monument Springs	07/16/2010-10/01/2010	720
	Guerry, Inc.			Sheep		22	Monument Springs	One band will trail through 05/25/2010-06/10/2010	1,000
House Creek[4] (1042)	House Creek Grazing Assoc.	14,096	78	Cattle	09/01-09/30	667	Cedar Creek	06/01/2010-08/01/2010	100
North Fork Field[3] (1088)	Cedar Creek Cattle Co.	3,469	1,300	Cattle	03/01-02/28	570	North	Rested for 2010. Typically grazed from July through September every other year.	0
Player Butte[4] (1047)	Y-3 II Ranch	2,159	20	Cattle	10/23-11/30	136	#1 #2 #3 #4	05/15/2010 – 06/15/2010	190
Player Canyon[4] (1027)	Y-3 II Ranch	2,857	1,791	Cattle	07/01-10/31	280	Player Canyon	07/01/2010 – 08/15/2010	190
Wells Field Office, NV									
Jackpot (03226)	Y-3 II Ranch	74,297	4,551	Cattle	03/01-02/28	6,912		Some of the allotment is currently under fire closure	600

1 These dates may vary each year.
2 The numbers of livestock shown here are for the 2010 grazing year. This number may fluctuate annually.
3 Allotment is subject to the Stipulated Settlement Agreement ordered by Chief Judge Winmill in October 2005. Animal Unit Months (AUMs) shown here are permitted AUMs per the Term Grazing Permit and may be different than the amount allowed.
4 Allotment is subject to Chief Judge Winmill's Decision and Order of February 26, 2009 directing BLM to adjust livestock grazing to maintain and enhance sage-grouse, pygmy rabbit, and slickspot peppergrass habitat.



LEGEND

Project Area Boundary

Grazing Allotment Boundary

Water Resources Feature

- Spring/Groundwater Seep
- Water Well
- Reservoir
- Trough
- Pond
- Tank

Pipeline

Land Status (Ownership)

- Bureau of Land Management
- Private
- State
- US Forest Service

Figure 3.4.2-1. Grazing Allotments Overlapping the Project Area and Both Options of the Southern Inbound Haul Routes

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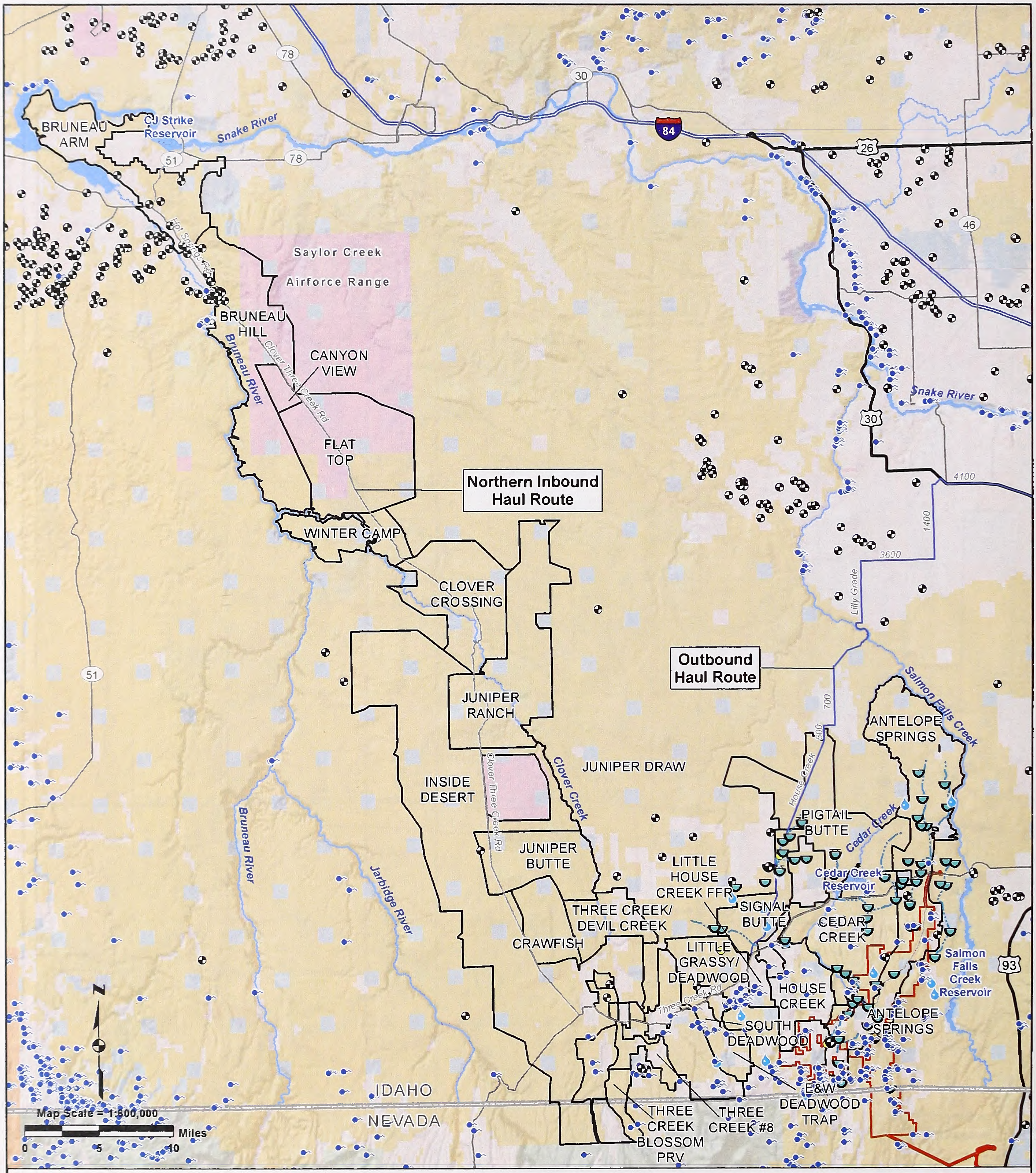

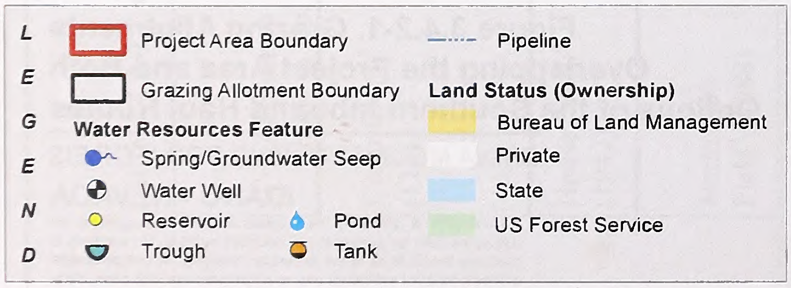

Figure 3.4.2-2. Grazing Allotments Overlapping the Northern Inbound and Outbound Haul Routes

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IDAHO - NEVADA